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ABSTRACT

This is a report of one of the Center for Educational Research and Innovation's (CERI) pilot studies in international transfer. The report states that the international transfer of learning systems involves a process whereby a learning system, a curriculum project, or an educational practice is introduced and implemented in a cultural and instructional setting other than that for which it was originally designed. The subject of this report is a microteaching transfer project involving "Minicourses," which were developed in the United States at the Far West Laboratory of Educational Research and Development. The participants in this study included educators from the United States, Norway, Great Britain, Sweden, West Germany, and Japan. This report contains information on (1) CERI's activities, (2) the initial stages of the microteaching transfer project, (3) the initial transfer processes, (4) the research and development process, and (5) the summary and conclusions of the microteaching transfer study. It is stated that the major conclusions of the microteaching pilot study is that in six of the seven countries which initially elected to participate, the transfer effort appears to have been successful. (RC)

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POUR LA FORMATION DES MAÎTRES

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Centre for Educational Research and Innovation (CERI)

THE INTERNATIONAL TRANSFER OF MICROTEACHING PROGRAMMES FOR TEACHER EDUCATION

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CONTENTS

Preface 5

Introduction 7

I. PRELIMINARY ACTIVITIES 9

II. INITIAL STAGES OF THE MICROTEACHING TRANSFER PROJECT 12

Rationale 14

The Design of the Project 15

Proposed Procedures 15

III. INITIAL TRANSFER PROCESSES 20

Dimensions underlying the Decision-Making Processes 20

Principal Roles and Facilitators 22

Critical Factors in Decision-Making 24

Organisation for Transfer 28

IV. THE RESEARCH AND DEVELOPMENT PROCESS 29

Steps in the Research and Development Process 29

Planning for and Developing the Prototype of the Training Materials (Teacher Handbook) 33

Planning for and Developing the Prototype of the Training Materials (Model Videotapes) 35

Preliminary Field Test 36

Main Product Revision 37

Main Field Test 37

Main Field Test - Minicourse One 41

Operational Product Revision 55

Dissemination and Distribution 55

Critical Factors in the Research and Development Process 58

V. SUMMARY AND CONCLUSIONS OF THE MICROTEACHING TRANSFER STUDY 61

Perceived Benefits from the Study 61

Disadvantages 63

Factors that Influence Successful Transfer 63
Conclusions regarding Transfer by the Pilot Study Participants 65
Role of Linking Agencies 66
Guidelines for Transfer 68
Additional Research Questions 71

Summary 73

Bibliography 75

PREFACE

The international transfer of learning systems involves a process whereby a learning system, a curriculum project or an educational practice is introduced and implemented in a cultural and instructional setting other than that for which it was originally designed. In practice, this usually means transfer from one national/cultural setting to another and consequent adaptation in whatever form is necessary to fit the system to the particular and unique properties and characteristics of the adapting culture and structures. Thus conceived, it covers various levels and degrees of adaptation, ranging from adoption of a learning system with few basic changes to the transfer of a concept or method with subsequent development of materials and design of strategies by the recipient country.

Transfer in certain forms is, of course, a long-established process. Educational practice and instructional materials have been applied throughout groups of countries that have common cultural bonds or political interests and there have been some extensive cross-cultural/international adaptations of entire curricula. The forces behind such cultural exchanges are in the main social or even political, but lately commercial interests in the publishing and instructional materials fields have also become important.

Such incentives for transfer will certainly continue to be important, but there is now a growing realisation that the transfer of educational curricula and materials may in some cases lead to activities which are educationally unsound, and even socially objectionable to recipient countries. Moreover, the evidence suggests that the very concept of transfer in terms of "supplying" and "receiving" countries is fraught with difficulty in view of the complex process of adaptation that is involved. In a real sense, transfer must be embedded in a broader concept of educational co-operation, in which responsibilities are involved for both "suppliers" and "recipients".

This is easily said, but there is at present little understanding of what is practically involved in operational terms. This is why CERI's work to date has focused on a number of practical experiments through which the advantages or disadvantages, and the

incentives and obstacles to transfer, can be explored. The need for such improved understanding is all the more urgent due to the fact that the international transfer of learning systems is accelerating. Given the increasing costs, both human and financial, of educatioanl development work, there is an incentive for all countries to seek relevant experience abroad. Moreover, given the fact that most of the results of educational development work - contrary to what prevails in other sectors - are in the public domain, most countries take an open and generous attitude concerning access to the results of nationally supported projects and to the exchange of such developments with other countries.

There is, of course, an element, and perhaps a growing element, of private commercial interest in the development and transfer of new learning systems. But the predominant interest is still public, and it should not be beyond the possibilities of co-operation between the public and private sectors to work out arrangements which would reflect the interests involved, and not least the social and educational needs of recipient countries.

The following is a report of one of CERI's pilot studies in transfer. The study here described, the most extensive of the transfer experiments, was concerned with the international transfer/adaptation of media-based materials designed for teacher-training and retraining, a so-called microteaching system. It has been carried out within a programme which involved six European universities, the American developers of the original materials, and the CERI secretariat. Other CERI studies have focused on a Swedish Maths Curriculum - the IMU Programme - and on a multi-media biology curriculum for university level - the Postlethwaite Learning Laboratory. During the course of the field studies, the project has encompassed the experiences of more than 20 educational institutions in Member countries of the OECD.

The purpose of the report is to describe, on the basis of controlled experiments, the processes and dynamics implicit in international transfer and exchange of educational innovations and practice. Implicit in this is a need that became apparent during the course of the study for further and even more intensive investigations into not only the ramifications and implications of transfer but the entire realm of international co-operation in original research and experimentation in the development of learning systems.

INTRODUCTION

The following is an account of one of the CERI's pilot studies in international transfer. As noted, studies have been carried out in transfer of an individualised maths project - the Swedish "IMU materials" (CERI/CT/71.85), a university level biology curriculum based on the concept of independent learning using multi-media and the microteaching materials, the subject of this report.

The microteaching transfer project was a particularly important experiment for the Centre because it involved the adaptation of a similar set of instructional materials into six national/cultural settings involving four languages. Furthermore, the same development and evaluation procedures were applied to each adaptation. Therefore it is possible in this report to use a common analytical framework to examine the cultural variables which influence the effective transfer of instructional materials across national boundaries. Because of the similarity in evaluation procedures used by the original developers and the transfer sites, it is also possible to compare the product effectiveness data collected within each country.

A basic premise of the transfer model used in the microteaching project is that transfer is a process which involves multilateral exchanges between principles in all countries involved. Such exchanges include a network of institutions that engage in multi-directional communication. Hence, transfer in this case is not "transplant" but rather is a redevelopment process in which relevant materials and procedures from the original product are selected and transferred directly or with modification; and in which totally new components may be developed. Also, because the transfer is a continuation of the development process initiated by a group of people in a single country, it is anticipated that the transferred set of materials may be more sophisticated and effective than the original products. A basic objective of this report, then, is to document this process of transfer-as-redevelopment and to suggest procedures that may make such transfer efforts even more effective in the future.

The CERI recognises the fact that transfer is a process which cannot follow a single model, given the diversity of goals, materials

and procedures that make up a country's educational system. It is further recognised that, in scope, transfer can and should range from the time-honoured free exchange of ideas and methods between educators to those adaptations which require an extensive, systematic process of redevelopment. Therefore, it would be imprudent to suggest that the strategies used in the microteaching transfer experiment would necessarily be effective or even desirable in all transfer projects.

It is further acknowledged that in some cases, in spite of what may appear to be economic advantages, transfer is not always an efficient practice.

In brief, therefore, the following report is presented as an analysis of <u>one</u> kind of transfer. Its aim is to serve, where appropriate, as a model which may suggest guidelines and criteria for the assessment of other educational materials relative to their transferability and suggest strategies for their adaptation when such adaptation is requested by a country other than that of the original developer.

I. PRELIMINARY ACTIVITIES

The current activities of CERI in international transfer of learning systems are the culmination of a series of exchanges among Member countries concerned with fostering educational change and innovation. For example, the Centre's participation in the microteaching transfer project is an outgrowth of international conferences held in Leiden (19-25 April 1970) and Dublin (29 August - 4 September 1971) and the previously-noted transfer of the IMU Maths materials from Sweden to England, Norway and Ireland.

While the conference at Leiden focused on types and uses of instructional technology, it established certain groundwork for further efforts in multinational educational innovation and addressed itself to the processes of transfer, particularly transfer of instructional technology. The conference on international production and transfer of learning systems held in Dublin provided the basis for a set of explicit recommendations about how the CERI might function in international transfer projects. Since these recommendations were implemented in the microteaching transfer project, it is appropriate to recapitulate them here:

A) <u>That CERI play a role in monitoring the transfer of learning systems after they have been selected for international transfer</u>. The purpose of this function was to help establish future guidelines for international transfer and to define the structure in which transfer is most effectively accomplished. It was proposed that this objective would most likely be accomplished by pilot testing learning systems which varied in scope, method, subject matter and technology.

As an outgrowth of the review of learning systems conducted during the first two days of the Dublin conference, a number of Member countries indicated substantial interest in self-instructional learning systems. The inquiries and dialogue focused on exploratory transfer of the microteaching materials which subsequently became the basis for the transfer study here reported. It was anticipated that experimentation with these particular materials would provide useful knowledge since they were based on the application of a rigorous development and evaluation methodology. Experimentation with these

materials also seemed desirable since they concerned teaching methods and innovation in teaching strategies, a strong area of interest expressed by the conference participants.

It should be noted that other self-instructional learning systems reviewed at Dublin also fell within the concept of the highly structured autotutorial approach to learning employed in the microteaching materials. Such systems appeared to be particularly suitable for initial experimentation in transfer inasmuch as, compared with more loosely defined systems, they were relatively free of cultural/social variables (which demand extensive adaptation and modification) and would provide valuable feedback relative to the feasibility of transferring materials demanding particular teaching strategies and requiring particular technology. The microteaching pilot project provided an opportunity to test this hypothesis along with gathering data to help establish guidelines for international transfer.

B) That CERI assist in the determination of criteria to be used in selecting learning systems for international transfer. As noted in "A" above, it was recognised at the Dublin conference that certain learning systems might be more suitable for international transfer than others, and it was felt that CERI could serve a useful function in identifying criteria for use in selecting projects for transfer. These criteria would include not only scientific evaluation of the direct effects of the training materials resulting from the pilot transfer projects, but also an analysis of the less tangible, but nonetheless important, by-products of transfer: stimulation of educational innovation in the participating countries, upgrading of developers' skills, cost and efficiency factors, and so on.

C) That CERI investigate the possibilities of establishing a facility for the training of people who would play key roles in the transfer process. Because most learning systems either contain a particular package of methods and materials necessary to their proper implementation or introduce concepts that require some modification of teaching strategies or classroom management, it was anticipated that any transfer project would presuppose an appropriate amount of staff preparation among those people who would actively implement the programme. However, since each project would be unique and consequently would encompass unique strategies, it was probable that any framework which might be established for purposes of training would necessarily be structured and geared separately for different projects. Hence, at least in initial transfer experiments, such a facility might necessarily be presumed to be an integral part of the basic planning for pilot transfer.

Within the microteaching project this need was met, for the most part, by selecting as director of each transfer site an individual who already has experience with the use of microteaching and who, thus, could devote major effort to acquiring the research and development skills necessary to carry out the adaptation, and, in turn, could train his staff in these skills. As a result of completing the transfer activities each site now has a core staff of individuals, skilled in producing and testing a complex and highly technical set of teacher training materials, ready to provide leadership for future transfer and/or original development efforts in their own and other countries.

D) That CERI continue to collect and disseminate information on independent learning systems. During the course of the Dublin conference more than twenty learning systems based on the concept of individualised instruction were reviewed to determine their potential as "transferable" systems. Subsequent to the conference, authorities in Member countries which had expressed interest in participating in the pilot transfer study were asked to review and select from among the twenty systems. It was recommended that CERI assist in this review and selection process by collecting and disseminating pertinent information. This recommendation was implemented by having the Centre serve in a consulting capacity when asked to do so or as liaison between the potential recipient country and the developers of the original materials. Out of this process came the decision to select a set of microteaching materials known as the Minicourse for a pilot transfer project. The decision-making occurred within national structures, the role of CERI being to provide information as requested.

II. INITIAL STAGES OF THE MICROTEACHING TRANSFER PROJECT

The first event in the development of the microteaching transfer project occurred at a meeting in Paris in November 1971. Participants included educators from the United States, Norway, Great Britain, Sweden, West Germany and Japan. The purpose of this meeting was to examine the microteaching materials called Minicourses, which were developed in the United States at the Far West Laboratory for Educational Research and Development, and to design a transfer project involving these materials.

The Minicourse model of teacher training was developed by Walter Borg and his colleagues at the Far West Laboratory (Borg, Kelley, Langer & Gall, 1970) and is based on the microteaching technology developed at the Stanford University School of Education in the early 1960s (Allen & Ryan, 1969). A single Minicourse provides all the instructional materials required to enable a teacher to learn a specific set of teaching skills - for example, how to use questions effectively in a discussion lesson.

Each Minicourse consists of filmed instructional materials plus teacher and co-ordinator handbooks containing a discussion of the teaching strategies, suggested ways to use the strategies, self-evaluation forms and follow-up lessons. During a Minicourse a teacher devotes 30 to 60 minutes a day, for seven to nine days, to microteaching in a small room with small groups of his own pupils - practising the skills he has seen demonstrated on film. In this way the teacher can practise his skills under a simpler and less demanding situation than prevails in the full classroom. In each microteaching session he videotapes his own performance and shortly thereafter evaluates his efforts when the pupils have returned to the regular classroom. The following three main steps are involved in taking a Minicourse:

Step 1 The trainee reads a handbook in which one to three specific teaching skills are described and views a filmed instructional lesson in which the skills are illustrated. The trainee then views the practice model lesson which shows a model teacher conducting a lesson in which each technique is demonstrated several times. While viewing the film, the trainee is asked to complete a form to give him practice in identifying the skills as they occur.

Step 2 The trainee prepares a lesson and uses it with five or six of his own pupils in a microteaching situation. The trainee records this lesson on videotape; immediately upon completion he replays the tapes and evaluates the replay using special evaluation forms developed for this purpose. The videotaped replays provide specific feedback on the teaching performance immediately after the lesson is completed.

Step 3 The trainee replans the microteach and reteaches this lesson to another group of pupils. The reteach lesson is also recorded on videotape and again the trainee evaluates his performance during replays of the tape.

STEPS IN THE MINICOURSE INSTRUCTIONAL MODEL

Step 1	Step 2	Step 3
Study and observe skills	Practice skills	Refine skills
Read about teaching skills View brief illustrations of skills View model lesson in which teacher uses skills	Plan and conduct microteach lesson to apply skills Evaluate use of skills in microteach lessons	Replan and conduct lesson Evaluate use of skills in reteach lesson

This three-step sequence is followed for each lesson of the Minicourse. Typically, Minicourses contain four or five lessons. Since no administrator or supervisor is required to conduct a Minicourse, and since no one need see the teacher's taped practice sessions, the Minicourse has proved comfortable and non-threatening to thousands of teachers. Moreover, these teachers have shown their approval by indicating an eagerness to take additional Minicourses. At the time of the initial interest in transfer of microteaching, minicourses were being used both in pre-service teacher preparation by colleges and universities and in in-service programmes within large and small school districts throughout the United States. This interest continues, as a result of transfer, and has expanded to countries beyond the United States.

After reviewing the Minicourse materials, the conference participants and CERI jointly prepared a proposal for the microteaching transfer project. Its main purposes were:

1. To adapt two teacher-training systems, one concerned with questioning and class discussion skills and one with individualised instruction, for use in four or more different countries. These systems, based upon microteaching, have been thoroughly tested with teacher in-service samples over a three-year period. There is considerable evidence that

the microteaching approach used in these systems brings about significant and lasting changes in the classroom performance of in-service teachers. Research evidence on the effects of the systems on pre-service trainees, although less extensive, indicates that microteaching is also effective at that level. The adaptations would be built primarily by the co-operating countries and would be carefully designed to relate to the structure and needs of the adapting countries.

2. To test the adaptations in the co-operating countries and compare with existing data. Comparisons would be limited to those skills that are regarded as relevant by each adapting country.
3. To study and document the problems involved in transfer (i.e. adapting and implementing the training packages in each co-operating country) and to prepare a handbook for use in transferring other educational products across cultures. This handbook would describe the adaptation process, alert the reader to possible problems, provide guidelines for field testing and evaluating educational products, and suggest procedures and strategies to be followed in planning and implementing future co-operative projects of the same kind.

In effect, therefore, the project would test: a) transfer within countries representing a varying range of previous experience in microteaching; b) transfer of microteaching as a technique for building teacher-oriented skills; and c) transfer of microteaching as a technique for building learner-oriented skills.

Rationale

The rationale for this project was that international transfer of developed and tested learning systems could offer a variety of benefits, and the process should be studied. Among possible benefits are these:

1. Since development costs are very high (over $250,000 for these two training packages) it is economically advantageous to make as wide use of tested and validated educational systems as possible.
2. The project could help train scientists in the development process and also open up for worldwide adaptation a variety of proven educational products.
3. Projects concerned with transfer could provide the first steps towards large-scale international projects in which development from the outset would be planned and conducted on a co-operative basis.

The nature of the two microteaching systems would introduce two other interesting variables into the transfer situation in that a) one focuses primarily on the teacher, while the other focuses primarily on the pupil; and b) one is designed for teachers at the primary level (children aged 4 - 7) while the other is designed for the intermediate level (children aged 10 - 12).

Further, the two systems appeared especially well suited for a transfer study because:

1. They had been thoroughly tested and a large amount of research evidence was available for comparative purposes.
2. Each is a relatively small learning system, requiring only about 15 hours of learner activity over a five-week period.
3. They are designed to improve teacher performance - an area that is almost universally in need of improvement.
4. They were built following a rigorous research and development process, therefore offering a change to provide effective training for project participants.

The Design of the Project

The project was viewed as a two-phased one with four to six countries involved in initial experimentation and provisions for other interested countries to send observers to gain the experience necessary to enter into a second phase. Selection of the co-operating countries and the educators to represent each of them would clearly have an important bearing on the project outcomes. An important criterion for participating countries would be their previous experience with the microteaching process. Further, greater insight into the transfer process would be achieved if one country were included which had no previous experience of it.

The optimum design for the initial phase was seen to involve the following:

1. An English-speaking country with microteaching experience to adapt the microteaching system on questioning.
2. A non-English-speaking country with microteaching experience to adapt the system on individualised instruction and questioning.
3. A non-European, non-English-speaking country with microteaching experience to adapt the system on questioning.
4. Non-English-speaking countries to adapt the system on individualised instruction.

Proposed Procedures

1. Selection of a key teacher education specialist from each co-operating country. These specialists, along with two consultants from the originating country, would form the development team.

2. Arrangement of a one-week planning session to develop final plans for the project. This meeting would be conducted most economically in Europe. In the course of it, the project plan should be revised so that it would result in end-products that would meet the needs of all participating countries.

3. Personnel from each participating country should study the scripts and handbooks for the system they are to adopt and make alterations in these materials to suit them better to their respective countries. This would include translation of these materials in the case of non-English-speaking countries,

4. After completion of the preliminary adaptations of the microteaching systems, a consultant from the originating country should work in each Phase 1 country for a period of two weeks to assist in producing videotapes of the first instructional and model lessons.

5. After completion of the adaptations, the development team should convene for one week in Europe to plan for field testing and evaluation. Field test and evaluation procedures would closely follow procedures followed in the originating country to ensure comparability of the results.

6. A field test to be conducted in each country. Each test would include a sample of at least 30 in-service teachers. The project consultants would visit each country for one week to assist in the pre-course data collection and the initial training phase of the project.

7. Throughout the entire project, extensive evaluation data would be collected on the performance of the field test teachers (FTT), responses of pupils of FTT, and attitudes of the FTT towards the training. Specifically, the data collected would include the following:

a) Videotape samples (10-20 minutes) of the teaching performance of each trainee before and after training. These videotapes would be analysed for the specific skills taught in the microteaching system.

b) Carefully structured observations of the trainees performing in their regular classrooms.

c) Measures, both written and observational, of the changes in pupil performance brought about by the training.

d) Structured interviews with trainees.

e) Questionnaire data to be collected from all trainees.

In addition, a detailed description of the transfer process and the problems involved with transfer would be prepared by the co-operating specialist in each participating country. Each country would also state its plans for further testing and implementation of the Minicourse package.

8. The following end-products would be produced by the project:
   a) a tested adaptation for each of the participating countries;
   b) a research report prepared jointly by the development team which would provide an analysis of the field test results for each participating country;
   c) a handbook dealing with the process of transferring educational systems from one culture to another.

After the Paris meeting the above proposals for an experiment in international transfer was submitted to Member countries. During the course of decision-making concerning participation in this study, additional interest in international transfer was created as the result of a meeting on microteaching held at the University of Tübingen, Federal Republic of West Germany, in April 1972. The meeting was sponsored by Volkswagen and the University of Tübingen. A series of lectures and seminars was organised to discuss microteaching technology and research, and the possibilities for its use outside the United States.

In early 1972 OECD Member countries were invited to send representatives to a conference at the University of Stirling, Scotland. This conference, held from 1-5 May 1972 under the sponsorship of CERI, the University, and the Department of Education and Science in London, was held to chart the course of the transfer with the Minicourses and to design the evaluation mechanism to be applied to both that transfer and any future experiments. The proposal developed at the Paris conference of 1971 provided a basis for further development of the microteaching transfer project.

Participants in this meeting represented institutions in France, Germany, Ireland, the Netherlands, Norway, Portugal, Sweden, the United Kingdom, and the United States. During the conference a number of Minicourses were demonstrated by representatives of the original developer, the Far West Laboratory for Educational Research and Development. From the 22 Minicourses developed by the Laboratory, the following four courses were considered by the conference participants:

   a) Minicourse 1 - Effective Questioning, Elementary Level;
   b) Minicourse 8 - Independent Learning: Primary (ages 5 - 8);
   c) Minicourse 9 - Higher Cognitive Questioning;
   d) Minicourse 15 - Independent Learning: Intermediate (ages 9 - 14).

During the presentation of materials the participants went through a sample handbook chapter, a sample film script, a field test schedule, and a sample field test report. During this process the culture-specificity of the materials became quite apparent. With few exceptions, the teacher-pupil dialogues in the handbook and the skill examples in the films included topics that were highly United

States-oriented - for example, the Westward movement, Huck Finn. The first handbook page the participants looked at contained six such items. Also, the references included the work of American researchers only.

Additional discussion at the Stirling meeting centred around the staff and funding requirements of a transfer project. The participating countries agreed to follow the same research and development-cycle that was used by the original developers and to attempt to meet the deadline established for each phase of the cycle. The reason for this procedure was to provide comparative data for future implementations. The research and development cycle that was proposed contained the following steps: note that for the transfer effort the model films were to be produced in videotape form.

Phases of development cycle	Institutions involved at each step	Deadline
1. Select course; decide whether to transfer either course or single lesson	Individual country/ OECD	September 1972
2. Translate teacher handbook	Individual country; FWL approval if major changes needed; correspondence to be conducted by mail	December 1972
3. Prepare scripts for instructional and model videotapes	Individual country; consultation with FWL	February 1973
4. Record videotapes; select and edit final tapes	Individual country; FWL representative on site to assist with selection of skill examples	March 1973
5. Conduct preliminary test of materials with five or six teachers	Individual country/ OECD	May 1973
6. Meet to plan main test with 30 teachers	Individual countries/ OECD; FWL	September 1973
7. Conduct main test	Individual country/ OECD	Oct.-Nov. 1973
8. Analyse data	Individual country/ FWL consultation	Winter 1974
9, Prepare final report and conduct summary session	Individual country/ OECD; FWL	June 1974

It was planned that evaluative data would be collected at the end of each of the following phases:

Phase I - Decision-Making and Selection of Materials

Phase II - Adaptation of Materials

Phase III - Pilot Testing of Adapted Materials

Phase IV - Major Field Test of Materials

Phase V - Implementation.

Questionnaires and other instruments for the collection of comparative data were designed by the Project Directors, the experts from the Far West Laboratory, and the CERI Secretariat.

Following the Stirling conference decisions to participate in the microteaching transfer project were taken in five countries with adaptations to be carried out at the following:

Netherlands - University of Nijmegen - Minicourse 1, Effective Questioning - Elementary Level;

Sweden - University of Göteborg - Minicourse 1, Effective Questioning - Elementary Level;

Great Britain - University of Lancaster - Minicourse 9, Higher Cognitive Questioning - Intermediate and Advanced;

Netherlands - University of Leiden - Minicourse 9, Higher Cognitive Questioning - Intermediate and Advanced;

Germany - University of Tübingen - Minicourse 9, Higher Cognitive Questioning - Intermediate and Advanced;

France - University of Paris VIII - Minicourse 9, Higher Cognitive Questioning - Intermediate and Advanced;

Norway - University of Trondheim - Minicourse 8, Organising Independent Learning - Primary Level.

In addition, adaptation projects were started in:

Netherlands - University of Utrecht - Minicourse 8, Organising Independent Learning - Primary Level.

III. INITIAL TRANSFER PROCESSES

The initiation of the microteaching transfer studies involved a number of important decisions and processes. This chapter focuses on the procedures that resulted in the involvement of the various countries. It discusses the decisions that were made, by whom, and at what level of educational responsibility; the procedures through which the exact materials to be adapted were selected in each country; the organisation of the adaptation teams; and the relationships which existed and/or evolved among the diverse agencies and institutions involved in the experiment. Through this review of the events that led to the actual adaptation process (described later) some guidelines may be extracted regarding the types of individuals, institutions, and other supporting structures that are prerequisites for a successful transfer effort.

Dimensions Underlying the Decision-Making Processes

The microteaching-based training materials were adapted into national settings which represent a variety of structures and decision-making processes. In those cases where the education system is more centralised, more directly tied into a national structure, the decision-making processes that occurred are more easily described and defined. In other settings, those countries where there are less formalised relationships between institutions and agencies, the procedures that resulted in the establishment of the studies are less clearly defined. However, in all cases there were certain commonalities that prompted the decision to become involved in the transfer study and entered into the process of material selection and into the organisation of the mechanics of the transfer adaptation.

Firstly, the transfer appeared to be a more rapid way to innovation in an area where specific needs were apparent and could be described. In most cases where experiments were set up and carried out, the major impetus was provided by people who were acutely aware of the need for materials that served an educational need (teacher education in this case) and who were familiar with the original development work carried out on the product to be transferred. Further, in the majority of sites, adaptation of the microteaching

materials extended research that was already under way in the areas of new approaches to in-service teacher training and the use of microteaching in both in-service and pre-service teacher-training programmes. Participation in transfer, therefore, afforded an opportunity to advance and expand existing research and development efforts.

Secondly, there appeared to be recognition of the potential value of international transfer as a process for innovation in various educational domains The pilot studies to be carried out in this experiment provided an opportunity to explore the processes and strategies involved and to develop a cadre of expertise and experience within the country. Thus the pilot study could provide for the initiation of a network both within the country and with other countries capable of carrying on future and more extensive exchanges of materials and practices.

Thirdly, because of their common interest in improving teaching and teacher training, some of the principal researchers in this pilot project had already established preliminary contacts with the original developer (Far West Laboratory) prior to the initiation of the study. The establishment of the international study provided a framework in which to formalise these contacts and acquire support for experimentation and gave access to the materials.

Fourthly, as noted briefly above, the methods and technology implicit in the system to be transferred, microteaching, were the object of mounting interest in certain countries. Thus participation in the study provided an opportunity to introduce a system which would allow for further experimentation with certain practices, i.e. microteaching and interaction analysis, which had already begun. This level of awareness about microteaching and knowledge of the ways in which it could be used in teacher training was found to be a critical factor underlying the success of the transfer effort. It also provided the motivation to complete the extensive adaptation of the materials that was essential to their successful use in the participating countries.

Other factors that prompted participation in the study sometimes represented unique interests. For example, according to Swedish experts, a factor that prompted participation in their country was related to its previously having played a role as an "exporter" of learning materials (in an earlier CERI study Sweden had provided the system, an individualised maths programme, which was adapted in certain other countries). Thus, Sweden felt an advantage in "importing" a system and thereby exploring the unique and particular processes that are a part of the analysis and redevelopment of a transferred product.

In another case - the University of Leiden, the Netherlands - participation was prompted by the fact that a transfer was already anticipated between the University and the developers of the materials used in the study. Thus, in this case, the establishment of an international study on the part of CFRI merely simplified and facilitated the completion of these arrangements.

Principal Roles and Facilitators

Although the microteaching materials were transferred into a variety of national settings, and the internal mechanisms ultimately established for the adaptation and implementation of the product varied according to these different settings, all experiences were facilitated and maintained by certain common components. Among these were:

a) National support. In every case where the transfer was carried out there was strong, active, and ongoing interest by national authorities. For example, funding, although arranged variously in different countries, was in almost all instances provided in part at national level. This obtained both during the initial decision-making phases and throughout the course of the experiment. In addition, the active participation of government level authorities in preparatory activities, planning sessions, and in the initial international meetings on transfer served to facilitate the decision-making processes and to provide the participants with a concept of the nature of the innovation to be adapted and the design of the experiment.

It has been a conclusion of participants in this study that the nature and extent of involvement at national level during the entire course of the experiment was critical to its completion. Further, in many cases, the active participation of national authorities has provided for direct and beneficial dialogue among national levels in dealing with critical educational problems and has often allowed for more candid interaction within national settings. This, in turn, should facilitate dissemination and utilisation of the adapted materials throughout each transfer country.

b) Individual leadership. In all projects a critical role in actually carrying out the experiment has been played by someone who served as the principal agent in the introduction of the innovation. While in some cases this agent provided both the initial leadership and later assumed responsibility for the management of the adaptation process at the institutional level, in other cases the initial decision-making role was played by someone who had little, if any, direct involvement in the execution of the adaptation itself.

Whether the individual responsible for initiating interest in the transfer effort actually guided the adaptation does not appear to be essential as long as he conveyed to the adaptation team all the information necessary to understand the materials to be adapted and the research to be conducted. On the other hand it is important for the "initiator" to maintain an interest in, and a close liaison with the adaptation team throughout the duration of the project. This is particularly important when the "initiator" has had previous experience with the basic elements underlying the system being transferred. Without continuing advice concerning these matters, adaptation effort may involve too many new elements for a naive development team to be successful. For example, in this study the adaptation team needed to work with several innovative elements - use of the microteaching technique, use of a multi-media training package, implementation of a complex form of programmed instruction, and introduction of innovative teaching strategies into the schools. Acquiring skill and knowledge in all these areas while at the same time carrying out an adaptation effort was an extremely large and complicated task. The experience of one of the sites, in fact, suggests that a transfer effort involving such an array of new ideas is too complex unless the initial leader already possesses skill in several of the areas and, although he may not actually direct the research and development effort, offers continuing advice and assistance.

In addition to the already-noted critical roles during the decision-making phase of transfer, certain other functions appeared to provide support and impetus to the launching of the study. These functions were carried out essentially by outside experts who had been instrumental in the development of the original product and by those members of the CERI Secretariat who had co-ordinating and linking roles in the establishment of the study.

Concerning the roles played during this phase by the original developer, the Far West Laboratory for Educational Research and Development, it is apparent that the direct involvement of key members of the Laboratory's development staff from the inception of the study provided the opportunity to structure the redevelopment process so that it maintained the integrity and validity of the original product and to assess the extent to which the products might thus be changed or altered while still maintaining their validity and comparability. Indeed their participation provided a ready source of advice and guidance during the entire redevelopment cycle.

Having received support at national level (from the U.S. National Institute of Education) that enabled the provision of adequate technical assistance to the study, the original developer was able to provide copies of the original teacher-training materials and the

original research designs and reports at no cost to the transfer sites. Representatives of the Laboratory who had participated in the original development also met members of the various transfer teams at their institutions, and in some instances at the laboratory, as well as conducting a continuing correspondence throughout the redevelopment process. Although the extent of interaction with Laboratory personnel varied among the sites, overall a fairly extensive and open dialogue was established. Thus, in essence, the role of the original developer has been critical in that it served not only to provide the model for redevelopment, but also made available the original research and development strategy against which the transferred product could be evaluated and assisted, as requested, with the redevelopment work itself.

The role of the international agent during the initial phases of the study was essentially that of co-ordinator and liaison between the countries and institutions that were involved.

As has been noted in Chapter 2, CERI organised the forum, the Dublin Conference, in which the concept of transfer was discussed and the pilot studies envisaged. From that point to the establishment of the redevelopment projects in each participating country its role was essentially focused on linking potential adaptors and key institutions in different countries and serving as the access route to the various levels and kinds of resources and participation which would be essential to the completion of the study. Thus, the main role of the international agent has been in the elaboration of the framework which initially brought together those experts and authorities interested in the potential of transfer and in maintaining communications within the network.

It should be mentioned that the strategic roles and functions carried out at the institutions engaged in the adaptation of the microteaching materials have not been delineated in detail here. Most of these roles and functions were identified and described after decisions were taken to transfer. The particular contributions and responsibilities assumed by these participants will, therefore, be described later on.

Critical Factors in Decision-Making

While the above-noted dimensions and roles appeared to be significant and present in all six adaptations of the microteaching materials (Minicourses), the actual procedures and steps implicit in each case varied somewhat. Generally speaking, such variations reflected the particular nature and organisation of the educational structure in the participating country. Consequently, in countries with a greater degree of central organisation, the decision-making processes involved a somewhat different pattern of events and

considerations than in those countries with less centralised systems. However, in all cases certain similar critical factors and events appeared to enter into and influence the decision to adapt the materials. These included:

- Exposure to the materials through an organised process which allowed for their critical examination. In the case of the study in question, all institutions which eventually carried out adaptations were exposed to the Minicourses during one or the other of the conferences and the organised meetings described in Chapter 1. They also received copies of the materials and the research reports regarding changes in teacher performance resulting from Minicourse training which could be examined in detail by pedagogical and technical experts at their various institutions.
- With the exception of the Universities of Trondheim and Nijmegen, some level of experience with the practices and technologies involved in microteaching and the technical skills and equipment necessary to complete the adaptation already existed at the institutional level.
- The experiment provided for access to a teaching system which was gaining attention in Europe and to the expertise of principals involved in the original research and development cycle. Further, the study provided the opportunity to experiment with the introduction of the innovation within a "low risk" environment, i.e. the materials were to be made available at no cost and copyright regulations were suspended for purposes of the experiment.
- The project itself would provide for the development of skills in transfer and the production of learning materials which could be used to bring about change in teacher-training in the respective countries.
- Interest in the potential advantages of transfer by national governments, institutions, and other funding agencies made resources available to carry out the experiments. Consequently, though funding arrangements varied in each case, there was the assurance of financial support and staff resources adequate to carry out the work. In some cases such arrangements were based on a "cost sharing" plan whereby the adapting institutions and the national government each provided certain funds and resources. In other cases a part of the work was funded by private foundation support; e.g. the Shell Grants Committee contributed to the United Kingdom Project. In all projects, certain of the costs of providing expertise from outside the adapting country were provided by CERI, and

Chart

THE ORGANISATION AND STAFFING OF THE

Development Site	Catholic University of Nijmegen	University of Leiden	University of Lancaster
Decision to join project	University Board of Institute of Education	University Board Department of the Science of Education	University project director; Department of Education and Science (National)
Regular administrative support to development unit	University project management	University project director	Government Department of Education and Science
Ultimate responsibility for project	University project management	University project director	University project director
Was development unit especially created	Yes	No	Yes
Developmental Unit Organisation	Project Management	Project Director	Project Director
	3 M.A.'s once weekly	1 Ph.D.	1 Ph.D.
	Daily Management	Exec. Director	Senior Res. Off.
	1 Dir. M.A. 1/2 time Asst. Dir. 1 grad. student	1 M.A.	1 M.A.
			Research Assoc.
			2 M.Sc.
	Technical Support	Technical Support	Technical Support
	field test co-ord. 3 grad. students observers/coders, 6 grad. students, 1 keypuncher translator 1 grad. student	field test co-ord. and evaluation 1 M.A., observers/ coders ? grad. students	observer/ coders 5 grad. students
	Films	Videotapes	Films & Videotapes
	professional outside university	1 professional inhouse	professional staff inhouse

Remarks: Nijmegen and Leiden worked together to co-ordinate the translation of concepts and technical terminology into understandable Dutch.

No. 1

TRANSFER/ADAPTATION GROUPS

University of Göteborg	University of Tübingen	University of Paris VIII
Government Department of Education	Head of University Department; Ministry of Education	University faculty member
Steering Committee consisting of Government Department of Education	Steering Committee consisting of University Head of Department and 2 project directors	university board of development
University Head of Department	University Head of Department	University faculty member
No	No	No
Project Management 2 M.A.'s	Project Director "adaptation" 1 Ph.D. Project Director "field testing" 1 M.A.	Project Director and students
Technical Support observer/coders 4 grad. students	Technical Support field testing and revising 1 M.A., translation 1 M.A.	
Films professional outside university	Video 1 grad. student	

the U.S. Far West Laboratory for Educational Research and Development, the developers of the original product.

Organisation for Transfer

Following the decision to participate in transfer, redevelopment of the microteaching materials was carried through the entire research and development process in five sites, partially completed in another, and terminated prior to the beginning of redevelopment in another. The accompanying chart (No. 1) describes the organisation and staffing of the sites which engaged in all, or part, of the research and development activities. It also provides information regarding the place of responsibility for the transfer project.

The information in the chart was obtained from questionnaires and reports received from the transfer projects themselves. In those cases where information is not provided, it has not been available from the project.

It is apparent that the organisation and staffing for the transfer effort was similar across sites. Generally, the national educational agency participated in the decision to join the pilot study. Responsibility for actually performing the redevelopment work was assigned to the university level.

Government level involvement in the transfer effort was most extensive in Sweden. Swedish government officials took the initiative to transfer and assigned the project to the University of Göteborg. In Great Britain, the Department of Education and Science also showed considerable interest and support in the project, although the initiative to transfer originated with the project director.

France, Great Britain, the sites in the Netherlands, and West Germany all had extensive interaction with the original developer (FWL). Members of these adaptation staffs visited the Laboratory to work with the original developers as well as having Laboratory staff come to their respective institutions one or more times. The knowledge and skill of the transfer teams, the contribution of the CERI staff, and other factors associated with the various projects appear to warrant further consideration of various ways of organising transfer activities in order to determine whether any one plan is, in fact, more efficient and effective than another. Based on the findings reported, it appears that a site should establish whatever plan best meets the unique needs of the individuals and agencies locally involved, and best uses the resources and expertise which exist at the adaptation site.

IV. THE RESEARCH AND DEVELOPMENT PROCESS

As mentioned earlier this transfer study was based upon a decision to adapt the teacher training materials to the culture and educational programmes of the participating nations rather than merely translate (adopt) the materials as they were developed in the United States. As a result of this decision, transfer of a research and development process similar to the one used by the original developer became as essential a feature of the project as the transfer of the materials themselves. Only through adaptation of the original R & D process would it be possible for the transfer sites to make statements regarding the effectiveness of the training materials in their respective countries and to compare these findings with those of the original developer. Further, testing of the adapted products in the ongoing teacher training programmes of the participating countries was required if changes in the training model that might be necessary in order to instal the adapted system successfully in the respective educational institutions were to be identified.

This section of the report describes the research and development process that was used and discusses the activities undertaken at each step in the process. It also presents the research findings that were obtained during the testing of the adapted materials.

Steps in the Research and Development Process

The research and development process utilised by the original developer (FWL) includes ten steps, eight of which were followed in some form by the transfer sites.

Original Steps	Transfer Steps
1. Research and data gathering. This includes a review of the literature, classroom observations, and preparation of a report on the state of the art related to the area of teaching included in the course.	1. Inserting into the research base already prepared by the original developer, theoretical views, research data, classroom observation findings, etc. from the educational literature of the transfer country.

Original Steps	Transfer Steps
2. Planning and feasibility testing. This includes the definition of the teaching skills to be included in the training package, statement of objectives, determination of course sequence, and small-scale feasibility testing.	2. Since an already developed and tested training package was being used in the transfer study, the sites were able to eliminate most planning and feasibility activities. The major activity was to review the training package as originally developed and determine any changes that should be made in order to adapt the teaching strategies to use in the respective sites.
3. Develop prototype of product. This includes the preparation of instructional and model lessons, handbooks and evaluation devices.	3. Same as in original development.
4. Preliminary field test. The test is conducted by the developer in one, two, or three schools, using between six and twelve teachers. It includes the collection and analyses of interview observational and questionnaire data. Pre- and post-training performance measures are developed and tried. The primary purpose is to establish that teachers can use the materials and consider them to be focusing on important aspects of teaching. It also allows the developer to practice the installation procedures that will be used during the main field test.	4. Same as in original development.
5. Main product revision. Feedback obtained from teachers during the preliminary field test is used as a	5. Same as in original development. It was anticipated that minimal revision would be required inasmuch as the

Original Steps	Transfer Steps
basis for revision of the training materials. The amount of revision generally depends upon the extent to which the product builds upon an already-tested model of teaching/learning and an already-implemented training procedure.	transfer was building upon already-tested models and procedures.
6. Main field test. This test is conducted by the developer in five to 15 schools using between 30 and 100 teachers. It includes the collection of quantitative data on teachers' pre- and post-course performances, usually in the form of classroom videotapes. The behaviour of the teacher in pre- and post-course tests is compared and results are checked with course objectives.	6. Same as in original development.
7. Operational product revision. This is the revision of the product as suggested by the main field test results. The revision is based on feedback and on the data regarding teacher change. If a lesson has not produced the required behaviour change, it must be revised.	7. Same as in original development.
8. Operational field test. The operational field test is conducted by regular school personnel in 10 to 30 schools. One of the main purposes of this field test	8. It was recommended that it might be possible to eliminate this step in the transfer sites. Since the original developer had completed ten operational field

Original Steps	Transfer Steps
is to find out whether the course will work without major interventions from the original developer.	tests (with ten different courses) and found the schools could use them with little, if any, assistance from the developer, it was suggested that the transfer sites conduct such a test only if they experienced considerable difficulty installing the training procedure in the schools during the main field test. For the most part, the transfer sites were, in fact, able to eliminate this step.
9. Final product revision. This is the revision of the product as suggested by the operational field test results. This revision normally brings the course to the point where it is ready for general (commercial) production and distribution.	9. Generally, the course was produced in the final version at the time of revision after the main field test (step 7 above). This last revision was not necessary.
10. Dissemination and distribution. This final step includes reports at professional meetings, in journals, etc. It also involves developing plans for implementing the training system in schools throughout the nation of the developer.	10. Same as in original development.

A discussion follows of the activities carried out by the microteaching transfer sites at each step of the research and development process. It includes a review of the problems that were faced and decisions that were made as well as providing information, as appropriate, regarding teacher performance before and after training and procedures used to instal the training system.

Planning for and Developing the Prototype of the Training Materials (Teacher Handbook)

Regardless of the instructional system being considered, whenever educational products and/or other innovative educational methods or materials are being adapted for use in countries other than that of the original developer, the initial step must be the development of a prototype of the adapted version. This involves expenditure of considerable time and effort on the part of the transfer team. The ultimate success of transfer hinges upon the quality of the materials resulting from this effort.

The development of the prototype of the microteaching materials followed a process that was somewhat similar in all the transfer sites. The procedures to be followed while building the prototype were agreed upon at the Stirling Conference. They were based upon two important premises:

1. that, as far as possible, too radical changes should be avoided so as to make possible comparisons with the original product and between the adapted products; and
2. where cultural differences made the teaching examples and/or the presentation of other course content inappropriate or irrelevant for teachers at the transfer site, these should be modified to include more relevant content.

In all instances the transfer sites began the adaptation process by reviewing and revising the teacher handbook for the particular Minicourse they were adapting - as might be Minicourse One, Effective Questioning, or Minicourse Nine, Higher Cognitive Questioning. In Great Britain, of course, no translation of the United States version was necessary. However, the required first step in all the other countries was to complete a direct translation of the original handbook. The next step for all sites was to ask individuals from a variety of pedagogical backgrounds to assess the handbook and recommend changes necessary to adapt the materials to their specific cultures and systems of education.

As was anticipated, all sites (Great Britain, the Netherlands - Nijmegen and Leiden - Sweden, West Germany, and France) made changes related to cultural differences. All made changes in the exemplary teacher-pupil dialogues and the suggestions for microteaching lesson content contained in the handbook so that the curriculum of their own country and the idiom of the national language would be fully taken into account. For the most part, this task involved more time and effort than was anticipated because the original handbooks emphasized an "applied" approach to training which meant that numerous examples of the use of each teaching skill were included in the text. Each example tended to be taken from curricular

content specific to education in the original country and, thus, had to be replaced by an example relevant to the curriculum of the adapting country. In order to maintain a handbook that was as similar as possible to the original version and yet accommodated these adaptations demanded careful analysis and redevelopment.

Another feature of the handbook that was modified by all sites was the "tone" of presentation. The original version was somewhat informal and familiar in tone. The adapted versions assumed a more formal presentation. In addition, Great Britain organised the course sequence so that it was appropriate to use in a teacher centre as well as an in-school teacher-training programme.

Sweden made several changes beyond those incorporated by Great Britain. They omitted all references to research conducted in the United States inasmuch as copies of the reports would not be available to a teacher who wanted to follow up a reference, so to include them would have little purpose. Further, Sweden elected to use the training package with pre-service trainees who were preparing to teach at both the lower and middle school levels (equivalent to both the elementary school and junior high school in the United States). The Swedish staff also extended the range of use of the course skills. This, in particular, required that the examples of teaching extend over a wider range of curricular topics than was included in the original version. The theoretical sections of the handbook also were reduced in scope by the Swedish staff and the teaching skills and psychological terms were translated freely so that implementation and recognition of them were made more evident by the names themselves. It was proposed that these changes would make the handbook more appropriate for use by pre-service trainees.

The Netherlands site at Nijmegen, which was adapting Mini-course One, also adapted the handbook for use with pre-service as well as in-service trainees. They likewise used less behaviouristic and academic terminology and omitted the United States research references. They inserted extra evaluation forms for micro-teaching and new quizzes. West Germany increased the discussion of concepts such as microteaching and Bloom's Taxonomy which were less commonly understood by teachers in Germany than in the United States. They included more information about problems relating to teacher questioning in the classroom since this has a place in German schools different from the United States. Also, Germany moved the background information included as a preface in the original handbook to an appendix. Being less familiar with programmed instruction, the German teachers otherwise felt they had to learn this information before they could attempt the teaching skills.

Overall, the task of developing the prototype of the teacher handbook required considerable effort - from two to three times the

estimate given at the Stirling Conference. Correspondence with the original developer was maintained throughout this period as the redevelopment staff members checked to be certain the changes they were inserting did not alter the form and purpose of the teaching skills.

Planning for and Developing the Prototype of the Training Materials (Model Videotapes)

As with the teacher handbook, the redevelopment of the videotaped models showing teachers using the skills contained in Minicourse One or Nine focused upon inclusion of examples that were more representative of the curriculum in the schools of the transfer countries. This meant that, in effect, most of the content of the videotapes had to be redone. Only the narrative comments used to introduce and explain the teaching skills being demonstrated could be maintained, and West Germany elected to modify this feature also by providing more background information in the spoken text.

Other changes in the videotapes followed closely the changes made in the teacher handbook. Great Britain used settings that illustrated both the teacher centre and school-based organisation for training. Sweden incorporated examples that were relevant to middle level as well as lower level instruction. Germany based the introductory videotape for Minicourse Nine on more structured information rather than the informal experience story included in the United States version.

Obtaining model teachers for the prototype versions of the videotapes is a problem whether one is preparing the original or an adapted version of the Minicourse because, at this point, no teachers are available who have had an opportunity to acquire a high level of expertise in the use of the teaching skills included in the training package. Some form of training, therefore, must be given to the teachers who will appear in the models prior to videotaping their model lessons. All the transfer sites elected to use some form of intensive training to meet this need. Great Britain used the United States films along with the first draft of the prototype teacher handbook to train their model teachers. Other sites developed training that included reading a rough draft of the prototype teacher handbook, practising the model lesson, followed by joint critiquing of a videotape of this lesson by the teacher and a member of the redevelopment staff. Generally, in-service, experienced teachers were used as the model teachers. In the model lessons, they worked with pupils from the classes they were currently teaching.

Contrary to the original development which was carried out by both an inhouse team of pedagogical experts and an inhouse

production crew, the transfer sites relied primarily on external production crews to carry out one or more of the production tasks - namely, the videotaping and/or the editing of the model lessons. This presented several problems. For one thing, it was costly in terms of both time and money. Since the external crews often did not understand the content that was important to the educational purpose of the videotapes they, at times, made inappropriate decisions in videotaping and editing. This, in turn, required somewhat more reworking of the videotapes than might have been necessary had the sites had the internal capability to both conceptualise and produce the teaching models.

Preliminary Field Test

Here, our analysis of the research and development process will be based upon the outcomes of only those five sites which, at the time of writing, have completed the entire developmental sequence. These are the sites at the University of Lancaster, Great Britain; the Universities of Leiden and Nijmegen, the Netherlands; the University of Göteborg, Sweden; and the University of Tübingen, West Germany.

According to the original research and development guidelines, the purpose of a preliminary field test of a Minicourse is to obtain qualitative information regarding teachers' opinions of the understandability and usefulness of the teaching skill in the course and to gain insight into any implementation problems that may need to be resolved prior to the main field test. Identifying aspects of the training system which should be modified and improved prior to the main field test is also an important goal of the preliminary test.

Three of the five sites - those in Great Britain and the Netherlands - followed very closely the preliminary field test procedures utilised by the original developer. Great Britain conducted two such tests; one modelled after the Far West Laboratory's more applied form of the test; the other after the more stringent empirically-oriented form. Sweden, due to time restrictions, conducted a modified test in which teachers read the entire handbook and viewed all the model videotapes but completed only a sample of the microteach lessons, all lessons being completed by at least one teacher. The decision to use a sampling procedure for testing the microteach lessons was based on the rationale that the Swedish staff had stable knowledge of and experience with microteaching and, therefore, should encounter few difficulties with this aspect of the course at the time of the main field test. Germany used what they referred to as a "preliminary reading test". Various teachers and professors read the direct translation of the teacher handbook

and recommend d changes that should be made in the prototype version.

The dimensions and results of the preliminary field test at each site are described in Chart No. 2. The changes in the course which were recommended by the field test participants are also included.

Overall, the preliminary field test results suggested far fewer revisions than were needed at the time of original development. This is encouraging inasmuch as the prototype redevelopment required rather extensive adaptation of the materials to the individual cultures. It appears that once the teaching skills are defined and sequenced in the training model changes in the exemplary segments of a microteaching-based Minicourse do not alter the validity and usability of the product. Given the complexity of the instructional system upon which the Minicourse is based, this suggests that transfer can be an efficient means to innovation in education even when the more elaborate and complicated products developed in recent years are the object of the transfer.

Since the field tests varied in the amount of information available to guide the revision process, it will be interesting to note in the report of the main field tests which follows, whether the revised products brought about similar levels and patterns of teacher change. If so, further transfer efforts may be able to consider alternative approaches to preliminary testing rather than merely implementing the procedures used by the original developer.

Main Product Revision

The revisions to be made in the adopted Minicourse - microteaching-based teacher training materials - prior to main field testing were identified at the conclusion of the preliminary field test. These changes are entered in Chart No. 2. In most instances, the revisions were completed during the summer of 1973 in preparation for additional testing when school began in the autumn.

Main Field Test

As noted by the original developer(1) the main field test is regarded as the most important of the three tests in the research and development process. To quote from their discussion:

> The primary purpose of the main field test, in the Minicourse development cycle, is to determine whether the course achieves

1) Borg, Walter R., Kelley, Marjorie L., Langer, Philip, Gall, Meredith D. The Minicourse: A Microteaching Approach to Teacher Education. London: Collier-Macmillan, Ltd., 1970.

Chart

PRELIMINARY

	Great Britain University of Lancaster		Netherlands University of Nijmegen
Transfer Site	Preliminary	Pilot Test	
Date of field test	March-May 1973	May-July 1973	May 1973
Participants	10 teachers 5 college of education lecturers	9 in-service teachers	5 student teachers from 1 teacher training institution 5 teachers from 5 elementary schools
Minicourse tested	One: adapted teacher handbook; original model films	One: adapted handbook and videotapes	One: adapted version (handbook and videotapes)
Data collection method	Daily observation by 3 members of project staff; structured interview at end of training	Pre-post training videotape of 20 min. lesson; prior to first tape given cue sheet describing course skills. Questionnaire on attitudes toward course interviews	Questionnaire regarding usefulness of parts of the course Group interview
Results	Teachers felt they made large to moderate change on at least some course skills. Questioned appropriateness of some of research cited in the handbook. Found certain self-evaluation forms ambiguous.. Model lesson films were difficult to understand; often missed identification of the teaching skill.	7 out of 14 cases, significant changes made by teachers. Skills that changed significantly were: No. times used redirection No. times used prompting No. times used further clarification Repeating own answer Repeating pupil's answer Length of pause Per cent of teacher talk Teachers began in sympathy with course goals.	Opinions expressed by the teachers are reflected in recommended changes listed below.
Recommended changes	Remove research from handbook. Write new self-evaluation forms. Redevelop model lesson films.	In general, work on initial revision rendered materials suitable for use by British teachers. Redesign of self-evaluation forms. More precise directions regarding course procedures. Reduce and simplify research references.	Preface in teacher handbook dropped: more modest one written. Behaviouristically coloured sentences in handbook rewritten in more common language. Chapters 1 and 2 in handbook reversed; information on daily schedule rewritten. Some research data which were not found relevant dropped. New quizzes and extra self-evaluation forms added. More examples of skills included in handbook.

No. 2

FIELD TEST

Sweden University of Göteborg	Netherlands University of Leiden	West Germany University of Tübingen
Spring term 1973	May-June 1973	July 1973
Student teachers	7 teachers (grades 4,5, 6) 2 teachers (lower grades)	4 teachers of pupils age 5-15 2 teachers of pupils age 15-19 2 professors in teacher training college 2 members of micro. staff
Ume: adapted version (handbook and videotape)	Nine: adapted versions (handbook and videotapes)	Nine: Translated handbook
Questionnaire giving impressions of parts of the course	Questionnaire regarding each component of course given after each unit (4 times) Semi-structured interview at end of course.	Reading test and critique based on: formulation, style, terminology; realism of examples; correctness of contents; logical structure of the programme; degree of difficulty, time needed, interview for general impression.
Given scope of test, difficult to draw any general conclusions. Subjects reported no difficulties working with the instructions or self-evaluation forms. Demonstrated a positive attitude toward the Minicourse.	Opinions expressed by the teachers are reflected in recommended changes listed below.	Opinions expressed are reflected in recommended changes listed below.
Made some lesser changes in the teacher handbook	Six handbook topics and exercises required change. Instructions for microteaching lesson and self-evaluation forms were insufficient: extended lesson preparation form forcing teacher to write down: question-classification purpose-answer expected. 3 videotapes revised. cutting out boring parts of teacher performance.	Some parts of text which presuppose knowledge of microteaching, Bloom's taxonomy, etc. need to be replaced by clearer definitions. Background information at beginning of book should be summarised and placed in an appendix since German teachers spent too much time with this material. Teachers preferred more complete theoretical information and more detailed explanation of content and procedures of the Minicourse. Need to give additional explanation and information about use of teacher questioning in real class situation.

its objectives, i.e. whether it brings about the desired levels of change in teacher and pupil performance. The test is designed to collect not only qualitative information, such as that obtained in the preliminary field test, but also quantitative evidence, based on the performance of teachers who take the course... A secondary purpose is to collect information that can be used to improve the course in its next revision... If the [main field test] data indicate that the course falls substantially short of its objectives, the course is revised and recycled through another test.

The five transfer sites that completed the development and testing of a minicourse conducted main field tests similar in purpose to those carried out by the Far West Laboratory. At the time of going to press, final reports of the tests have been prepared by:

Great Britain:

Elizabeth Perrott, Arthur N. Applebee, Brian Heap, and Elizabeth P. Watson. Changes in Teaching Behaviour After Completing a Self-Instructional Microteaching Course. Technical Report, University of Lancaster, OECD International Microteaching Unit, Lancaster, England, 1974.

Elizabeth Perrott, Arthur N. Applebee, Brian Heap, and Elizabeth P. Watson. An Investigation into Teachers' Reactions to a Self-Instructional Microteaching Course. Technical Report. University of Lancaster, OECD International Microteaching Unit, Lancaster, England, 1974.

The Netherlands:

P.K. Kieviet, P.L. van der Plas, Mevr. C. Brandt. Ontwikkeling Minikursus Denkvragen Stellen. Rijksuniversiteit Leiden, Intersubfacultaire Vakgroep Onderwijskunde, Stationsplein, Leiden, 1974.

S.A.M. Veenman. Minikursus Effecktief Vragen Stellen. Instituut voor Onderwijskunde, Katholieke Universiteit, Nijmegen, June 1974.

Sweden:

Gunlog Bredange and Jan-Gunnar Tingsell. Transfer and Adaptation to Swedish Teacher Training of Minicourse 1: Effective Questioning. Göteborg, Pedagogiska Institutionen, June 1974.

The site at the University of Tübingen, West Germany, has conducted the main field test but is awaiting completion of data analysis before writing its report.

As detailed earlier in Chapter 2, two sets of teacher training materials were included in this study - Minicourse One, Effective Questioning - Elementary Level, and Minicourse Nine, Higher Cognitive Questioning. A major goal of the study was to conduct a series of

transfer experiments similar enough in nature to be compared among themselves and with the original developmental effort in regard to changes in teacher performance resulting from training. This goal has been achieved. The discussion that follows will present the comparative findings for the testing of Minicourse One.

Main Field Test - Minicourse One

The effects upon teacher performance of Minicourse One training were tested with both pre-service and in-service teachers. Inasmuch as the added experience of in-service teachers may be expected to influence their level of performance before training and the amount of increased skill and knowledge they will demonstrate after training, data from the pre-service and in-service settings will be presented and discussed separately.

1) Hypothesis to be Tested. The three Minicourse One sites - the Universities of Lancaster, Göteborg, and Nijmegen - had as their major purpose to determine whether or not Minicourse One training achieved its objectives for changing teacher behaviour. The hypotheses that were tested in each study are listed in Chart No. 3. The same hypotheses applied to both the pre-service and in-service tests at the University of Nijmegen. For purposes of establishing the similarity among these tests and the original main field test, the hypotheses tested by the original developer(1) also are included.

While all the sites, including the original developer, tested similar hypotheses regarding changes in teacher use of the specific skills covered in Minicourse One, some sites also sought to answer additional research questions. Great Britain, for example, investigated whether teachers' knowledge of the criteria on which they were to be evaluated would influence pre-course teaching performance. In their pre-service studies, Sweden and the United States compared changes of student teachers taking Minicourse One with a group of student teachers who did not take the course. This control group was added to the pre-service sample because, as was stated by the Swedish research team, "they had had rather limited possibilities of developing any specific or stable teaching pattern /and/ it could be expected of them, that during their practice term...

1) Data and other information reported for the original development are taken from: Walter R. Borg, The Minicourse as a vehicle for changing teacher behaviour: A three-year follow-up. The Journal of Educational Psychology, 1972, 63, 572-579; and Walter R. Borg, Warren Kallenbach, Merva Morris, and Allen Friebel. Videotape feedback and microteaching in a teacher training model. Journal of Experimental Education, 1969, 37, 9-16.

Chart No. 3

HYPOTHESES TO BE TESTED

Main Field Test - Minicourse One

University of Lancaster (In-service)	University of Nijmegen (In-service & Pre-service)	University of Göteborg (Pre-service)	Far West Laboratory for Educational Research and Development (In-service & Pre-service)
Common Hypotheses			
1. Significant increases from pre-test to post-test, and from the pre-test to retention test in frequency of redirection, prompting, further clarification, and refocusing; mean length of pause; mean number of words per pupil response; percentage of answers probed and of higher cognitive questions.	1. To significantly increase the number of times that a teacher uses: pausing, redirection, higher order questions, prompting, seeking further clarification, refocusing.	1. The teacher skills which the Minicourse treats are employed to a greater extent after completing the course: length of pause/question, word/pupil-response, redirection, prompting, higher cognitive questions, further clarification, refocusing, non-punitive reaction.	1. Teachers who complete Minicourse One will significantly increase their use of: redirection, prompting, further clarification, length of pupil response, higher order questions.
2. Significant decreases from pre- to post- and from pre- to retention in percentage of teacher talk, and the frequency of answering own questions, repeating own questions, and repeating pupils' answers.	2. To significantly increase framing of questions that call for longer pupil responses.	2. The teacher skills which the Minicourse treats are employed to a lesser extent after the completion of the course: repeats own questions, answers own questions, repeats pupil responses, per cent teacher talk, punitive reaction.	2. Teachers who complete Minicourse One significantly decrease their use of: repeating own questions, repeating pupil answers, answering own questions, per cent teacher talk.
	3. To significantly decrease the framing of questions that call for yes or no or one-word replies.		3. Four months after training is completed, teachers will not regress significantly in their use of the course skills (in-service study only).
	4. To significantly reduce the number of negative behaviours observed by a teacher during a discussion lesson: repeating his own question, answering his own question, repeating pupil's answers.		
	5. To significantly reduce the percentage of discussion time used for teacher talk.		
Unique Hypotheses			
Significant increases in percentage of non-volunteers called on and percentage of higher order pupil responses.		There is on the whole no significant difference between pre- and post- recording results for teachers in the control group.	Student teachers taking the Minicourse in conjunction with student teaching will make significantly greater changes in the teaching behaviour covered in Minicourse One than similar subjects taking student teachers without the Minicourse.
Significant increases in pre-course levels on those variables listed in (1) above for teachers who were informed of the skills to be evaluated before the course, compared with the other teachers in the group.		There is on the whole no significant difference between student teachers at different levels in command of the skills of the Minicourse.	Student teachers completing the entire Minicourse One will display significantly greater changes in the teacher behaviours covered in Minicourse One than a similar group which receives the entire course except for practice in the micro-teaching format and VIR feedback.
Significant decreases in pre-course levels on those variables listed in (2) above for teachers who were informed of the skills to be evaluated before the course, compared with the other teachers in the group.			Student teachers completing the entire Minicourse One sequence will display significantly greater changes in the teacher behaviours covered in Minicourse One than student teachers who complete Minicourse One without VIR feedback.

they would change their teaching behaviour a great deal /with or without the Minicourse/." Sweden also tested whether the level at which the student teacher was teaching influenced the use of the skills since they had elected to extend the course to teachers working with pupils younger than those in the United States study.

The report and discussion of findings which follows focuses only upon those hypotheses which all of the Minicourse One transfer sites and the original developer had in common since the success of this pilot study in transfer can best be judged on this basis. For information relative to the unique hypotheses tested at the various sites, the reader is referred to the individual charts just listed. These reports contain more extensive and detailed information about the main field tests than is included herein and, thus, will be of interest to many educational researchers and practitioners for more in-depth perusal of all outcomes, including the unique areas of investigation.

2) Sample. Interpretation of findings as reported by the various testing sites will depend largely upon the similarity of the samples of teachers who participated in Minicourse One training. The samples for the studies include:

a) In-service sample. The number of teachers participating in each of the studies focusing upon in-service teachers is listed in Chart No. 4. The chart also includes information regarding any teacher characteristics relevant to interpreting changes in teacher performance.

The samples for the three studies generally are similar in the age of pupils taught although the Nijmegen sample does cover a wider range of pupil ages than Lancaster or Far West Laboratory. It should be noted that the United States sample is taken from those teachers remaining in the classroom three years following the Minicourse main field test (this is because they participated in a three-year follow-up study). The main field test and 4-month retention scores reported for these teachers are those that were obtained at the time of the original test, however, given the stability of this teacher sample, their performance may be somewhat higher at all stages (pre, post, and retention) than might be expected of a more random group of teachers.

b) Pre-service sample. The samples for the pre-service studies conducted at the University of Nijmegen, the University of Göteborg, and the Far West Laboratory are described in Chart No. 5.

Both the Swedish and Dutch pre-service transfer studies extended the age-range of pupils with whom the student teachers were working to a lower level. The subjects in all three studies were engaged in in-school student teaching experiences at the time Minicourse training was conducted.

Chart No. 4

TEACHER SAMPLE
Minicourse One - In-service

University of Lancaster	University of Nijmegen	Far West Laboratory for Educational Research & Development
n = 28 teachers (all volunteers) 13 - taught primary school children in age range 9-11 8 - taught first year secondary (age 12) 7 - were from small country primary schools with mixed age groups in the range 8-11	n = 36 teachers 6 teachers from each of 6 elementary schools (all volunteers) 10 - first and second grade teachers 12 - third and fourth grade teachers 11 - sixth grade teachers Half the participating teachers were drawn from schools serving predominantly working class communities. Half were from schools serving predominantly middle-class communities	n = 24 teachers (all volunteers) teachers were teaching grade, 4, 5, or 6 These teachers were those who were still teaching 3 years after the original main field test. They are taken from the original sample of 48 teachers who participated in the original main field test

3) Method. The treatment for all the studies (in-service and pre-service) consisted of training with Minicourse One. The steps in this microteaching-based training model were outlined in Chapter 2 of this report. In review, they include reading a handbook; viewing a videotape which demonstrates the use of the particular teaching skills included in the course; planning, teaching, and evaluating a microteach lesson; and planning teaching, and evaluating a reteach lesson. Generally, the training cycle requires five weeks to complete, with the teacher devoting approximately three to five hours per week to training. All sites followed this basic procedure.

Information regarding changes in teacher performance, in all cases, was obtained through the use of pre-course and post-course videotape recordings of the teachers leading a discussion with their pupils. In all instances, these recordings were 20 minutes in length; however, the Swedish data and the United States

Chart No. 5

TEACHER SAMPLE

Minicourse One - Pre-service

University of Nijmegen	University of Göteborg	Far West Laboratory for Educational Research & Development(*)
n = 36 student teachers (experimental) 36 student teachers (control) 24 student teachers from each of three teacher training institutions located in Nijmegen, Arnheim, and Tilberg were randomly assigned to an experimental or a control group; giving 12 from each institution in each group. All student teachers were randomly assigned to grade level one, three or five of the elementary school.	n = 42 student teachers (all volunteers) 32 were assigned to the experimental group 10 were assigned to the control group In the experimental group, 14 were student teaching at the middle level 12 were student teaching at the junior level All student teachers in the control group were student teaching at the middle level	n = 46 student teachers from three teacher training institutions 17 experimental student teachers were from College A 15 experimental student teachers were from College B 14 student teachers from College C served as the control group All the subjects were student teaching in grades 4, 5, or 6

*) number of subjects represent only those who completed entire Minicourse or were in control group.

pre-service data are based upon the analysis of only a 15-minute portion of the lesson. The teachers in Great Britain, Sweden, and the United States worked with their entire class when the video-recordings were made. The teachers in the Netherlands worked with half the pupils in their classes. All teachers worked with pupils with whom they were familiar and for whom they had had previous instructional responsibility. In the pre-service study, this demanded that the pre- and post-recordings and the training be completed while the student teachers were engaged in their in-school student teaching programmes.

Given the overall similarity in treatment conditions for the Minicourse One studies, it is possible to make a number of comparisons among the findings. The size of the pupil group participating in the Netherlands' pre- and post-recordings is still sufficiently large not to affect the teachers' use of the teaching skills covered by Minicourse One when compared with teachers

working with entire classes. If the group size had been reduced to 3 or 4 pupils, some differences might have been expected as a result of group size, but teacher interaction with groups of 10 to 20 will probably differ very little from that with groups of 20-30.

Each of the transfer sites also gathered information regarding other outcomes of the training programme. Since both Great Britain and the United States included four-month retention tests of in-service teacher use of the Minicourse One skills, those findings are reported here. Other findings such as teachers' attitudes toward various aspects of the Minicourse are summarised in the Conclusions. This information may be obtained from the individual national reports. Likewise, data regarding methodology and outcomes for the unique hypotheses studied at each site are not reported here but may be obtained from the individual reports. (See Bibliography).

4) Scoring of Videotapes. A final aspect of each study that should be reviewed before training outcomes are presented is the procedure used to score the pre-, post-, and retention videotape recordings of teachers leading a discussion with their pupils.

Instructions on the procedures to be used in scoring were supplied to the transfer sites by the original developer. As much as possible, the sites followed these procedures.

The videotapes were scored for 10 common teacher behaviours.(1)

redirection - number of times the teacher called on another pupil to respond to a question already answered by at least one other pupil.

prompting - number of questions designed to prompt a pupil who had just given an incorrect or "I don't know" response.

further clarification - number of questions asking a pupil to clarify or expand upon an initial response, without providing hints or prompts.

refocusing - number of questions which ask a pupil to relate an acceptable answer to another topic.

answering own question - tally of instances in which the teacher answers his own questions, either before or after calling on a pupil.

repeating pupil's answer - tally of instances of repeating a pupil's answer without clarifying it or introducing new ideas.

repeating own question - tally of instances of repeating the same question without introducing new information.

length of pause after question - the average length of pauses between asking a question and calling on a pupil, to the nearest tenth second.

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1) Definition of behaviours taken from the University of Lancaster report.

per cent higher cognitive questions - defined as questions which required the pupil to go beyond a simple remembering of facts or an unsupported statement of feeling. All others were categorised as lower order. Redirected questions were tallied only once. Procedural questions were excluded from the analysis.

per cent teacher talk - all instances of teacher talk were timed in seconds and totalled for each lesson. The proportion of teacher talk was then calculated as the ratio of teacher talk to total lesson length.

Two types of pupil performance also were scored:

length of pupil responses - tally of number of words in each answer to a given question. Responses to probing questions were counted as responses to separate questions. For each teacher, the average length of pupils' responses was then calculated.

Number of one-word pupil responses - this included responses such as "yes", "no".

The rating procedure required that raters who were not members of the project teams be recruited and trained to score the videotapes. In Lancaster, four raters were used; in Nijmegen, six were used; in Göteborg, four; in the United States, eight raters scored the in-service tapes, and 15 raters were used for the pre-service study.

Since all raters did not score all the videotapes, inter-rater reliabilities for the scoring should be considered. Based upon Pearson product-moment correlations between the scores assigned to each of a sample of videotapes which were rated twice, the Lancaster site reported an average correlation between pairs of raters of .85. Nijmegen, using analysis of variance, found that inter-rater reliability ranged from .99 on some teacher skills to .51 on a number of higher cognitive questions (because of the low coefficient for this skill, the variable was scored twice and the average score was used in the subsequent analysis). Göteborg reported inter-rater agreement ranging from .58 to .99 based upon Spearman's correlation of ranks. The United States in-service study reports reliability coefficients of .60 to .98 using Spearman Brown formula and .57 to .99 for the pre-service study.

5) Results. The teacher and pupil performance data for the Minicourse One in-service and pre-service studies are presented in Tables I and II. Two important questions to be considered as these Tables are reviewed are whether Minicourse One training brought about significant changes in teacher behaviour (accomplished the objectives of the training system) and whether the adapted courses produced changes which are similar to, greater than, or less than

those effected by the original product. These are important criteria for judging the success of this pilot study in transfer. If the materials, adapted to the needs of the transfer countries, continue to reach the objectives (produce desired changes in teacher behaviour), transfer may be considered a viable alternative to original development.

a) In-service teachers. Table I summarises the results of the main field testing of Minicourse One with in-service teachers. Only those teacher and pupil skills that were investigated by all projects are included. Information relative to teacher change in other skill areas and interpretation of outcomes relative to hypotheses not discussed herein may be obtained from the individual national reports of the study.

Because of some differences in the statistical analysis procedures used, the findings for the projects will be compared on two bases; the number of skills on which teachers changed significantly in the desired direction as reported by the statistical procedures used in each site, and the average per cent of change from pre-course to post-course for each teaching skill.

As stated earlier, a common hypothesis was that after training teachers would increase their use of certain of the course skills. Statistically significant increases were demonstrated for three skills - redirection, prompting, and use of higher cognitive questions. It is interesting to note that for redirection the teachers in all three field tests achieved nearly the same level of performance after training even though the teachers in Great Britain and the Netherlands started at a lower level. Prompting, on the other hand, was a skill which the United States teachers used more frequently before training than did the other teachers. They also reached a higher level after training although all samples showed a high per cent increase in use of the skill. Use of higher cognitive questions demonstrates some problems in interpretation due to a difference in scoring procedures. The teachers in the Netherlands appear to have made the largest gain in terms of per cent of increase pre- to post-. There is a rather large difference in the use of the skill by teachers in the United States and Great Britain both pre- and post-course with the British teachers using a higher percentage of such questions. Per cent of gain in use of higher cognitive questions is similar for the two groups, however.

None of the teachers made a significant increase in their use of refocusing. Two probable explanations may be offered for this finding. One is that pupils tend to keep on the topic when participating in a discussion that is being videotaped and, therefore, provide few opportunities for the teacher to use refocusing. The

Table I

MINICOURSE ONE

In-service Teacher Performance

Country	USA				Great Britain				The Netherlands (Nijmegen)			
Sample Size	Pre-Course 24	Post-Course 24	4-month Retention 20	% Change Pre-Post	Pre-Course 28	Post-Course 28	4-month Retention 28	% Change Pre-Post	Pre-Course 36	Post-Course 36	4-month Retention 36	% Change Pre-Post
Teaching Skills												
Redirection	23.75	34.60*)	38.15*)	45.7	16.5	33.6*)	30.8*)	103.6	19.32	38.28*)	-	98.1
Prompting	4.05	11.30*)	9.15	179.0	2.2	5.5*)	4.2*)	150.0	1.80	6.97*)	-	287.2
Clarification	3.65	7.90*)	10.25*)	116.4	4.7	7.4*)	8.2*)	57.4	5.30	5.51	-	4.0
Refocusing	.10	.02	-	-80.0	-	-	.01	-	-	.15	-	-
Repeating own question	14.35	5.25*)	2.55*)	-63.4	6.6	2.5*)	2.0*)	-62.1	8.92	5.66	-	-36.4
Repeating pupil's answer	29.9	5.75*)	5.35*)	-80.8	30.1	6.5*)	8.8*)	-78.4	37.94	10.68*)	-	-71.8
Answering own question	4.40	1.25*)	.60*)	-71.6	1.3	.7	.05*)	-46.1	6.67	2.00*)	-	-70.0
Length of pause after question	1.93a)	2.32a)	-	20.2	1.8a)	2.5*a)	2.3a)	38.8	1.33a)	2.97*a)	-	-123.3
Per cent higher cognitive questions	38.00a)	50.00*a)	51.00*)	31.6	46.80a)	63.50*a)	65.2*a)	35.6	3.24b,c)	5.17*b,c)	-	59.6
Per cent teacher talk	53.00	33.00*)	34.00*)	-37.7	75.10	53.30*)	61.2*)	-29.0	49.00c)	31.19*c)	-	-36.3
Pupil Skills												
Length of response	6.02a)	12.33*a)	10.47*)	104.8	7.3a)	9.3	8.3	27.4	8.47	8.10	-	-4.4
Number of one-word responses	6.00	2.50*)	2.85*)	-58.3	-	-	-	-	14.61c)	15.61c)	-	6.8

*) Significant at .05 or less.

a) Based on 5-minute sample.

b) Represents total number of higher cognitive questions rather than per cent.

c) Based on 10-minute sample.

other is that the original course failed to teach this skill and the adapted versions made no improvement in this particular segment.

Teachers in Great Britain and the Netherlands significantly increased the length of their pauses after answering while those in the United States did not. However, the pattern and range of the change is very similar for all three countries.

The use of clarification increased significantly in the United States and Great Britain but not in the Netherlands. Again, the post-course performance for British and American teachers was very similar.

Teacher use of certain of the teaching skills was expected to decrease after training. These skills were repeating own question, repeating pupils' answers, answering own question, and per cent teacher talk. Teachers at all the sites made statistically significant decreases in all these skill areas. They also showed similarities in per cent of change. British and United States teachers made similar changes in repeating own question and repeating pupils' answers, although the frequency of occurrence of repeating own question was lower for the British teachers both pre- and post-training. Teacher performance in the United States and the Netherlands evidenced approximately the same per cent of change in answering own question and per cent teacher talk. Their actual level of performance, post-course, was also similar for per cent of teacher talk but the Netherlands teachers answered their own questions more often than the United States teachers even after training.

Another important feature of the adapted product is the extent to which teacher use of the specified skills affects pupil performance. Only one measure of this effect - length of pupil response - was reported by all three sites. Teachers who were trained with the original product appear to have had considerably more influence on this variable than teachers who worked with the adapted materials. Reasons for these differences are not available from the individual reports. Great Britain did report, however, that on another pupil variable measured only in that study - proportion of pupil higher order responses - significant changes occurred. Forty-nine per cent of the pupils' responses were higher order before the teachers participated in Minicourse One training; 67 per cent after.

While the teachers across sites differed in their use of one or two specific skills, the overall similarity in pre- and post-course performance and the similarity in per cent of change in the desired direction among the sites is remarkable. The data suggest that for in-service teachers, transfer of teacher training products

can be successful. Three findings, in particular, form the basis for this conclusion:

1. based upon their pre-course performance, the teachers in all three countries appeared to need training in the same skills;
2. the adapted materials were as successful in producing teacher change as the original product, and
3. the 4-month retention scores for the United States and British teachers indicate that the teachers maintained and/or improved their use of the skills at approximately equivalent levels in both countries.

b) Pre-service teachers. The results for the main field test with pre-service teachers in the United States, the Netherlands, and Sweden are presented in Table No. 2. Information is provided for only those variables reported by all three sites. Data relevant to each site, unique outcomes may be obtained from the individual reports prepared by the research team in each country.

As with the in-service sample, the two outcomes that are of most interest as indicators of the success of transfer are the similarities in pre-post course performance of the pre-service teachers at the three sites and the extent to which the adapted version of Minicourse One produced changes in pre-service teacher use of the skills similar to those produced by the original version.

Overall, the pre-service trainees made fewer significant changes in their use of the specified skills than the in-service teachers. This was true at the time of the original testing of the product as well as in the transfer studies. Skills that showed significant changes in the desired direction in Sweden were redirection, prompting, repeating pupil's answer, length of pause, and per cent higher cognitive questions. The United States pre-service teachers (original product) changed in a somewhat different pattern, making significant changes in three of the same skills as the Swedish trainees - repeating pupil's answer, length of pause, per cent higher cognitive questions; and also changing significantly in clarification, per cent teacher talk, and length of pupil responses.

The Netherlands site reported significant changes only as contrasted with the pre-service trainees in their control group so their teachers cannot be compared with the Swedish and United States samples on the basis of statistically significant changes.

Using actual levels of performance as indicative of similarity in outcomes is difficult because the length of the lesson from which the data were obtained differed somewhat among the sites. Nonetheless, the similarity of pre-course performance among the three samples is higher than might have been expected. Likewise, their use of the teaching skills after completing the training is

comparable. The teachers in the Netherlands continued to repeat their own questions and answer their own questions more frequently than the other teachers; otherwise the differences were very small.

Using per cent of change as a measure of course effectiveness, there is somewhat more variation among the pre-service results than in the in-service sample although the trends are similar throughout (large increases being on the same skills across sites and across in-service/pre-service teachers).

In all three pre-service studies, the trainees in the control group, who received no training, made few changes, whereas the trainees who completed Minicourse One made several. When compared on this dimension, the Minicourse trainees in Sweden differed significantly from the control group in five skill areas; in the Netherlands they differed significantly in eight skill areas. It may be assumed, therefore, that the student teaching experience in and of itself does not cause pre-service trainees to improve their teaching skills as much as the combination of both in-school student teaching and Minicourse One training.

Given these pre-service data, the transfer of Minicourse One for use in pre-service teacher training appears to have been successful. The adapted products achieved the course objective of changing teacher behaviour as well as the original product for the majority of teaching skills.

Data are not included in this report regarding the extension of the use of course skills with a wide age range of pupils, a unique hypothesis in both the Swedish and Netherlands field tests. They may be obtained from the individual reports. However, both the Netherlands and Sweden reported that grade level had no statistically significant differential effect upon use of the skills. The adapted materials were successful in the expanded as well as the originally intended settings.

c) Teacher opinion. Each of the transfer sites asked teachers to complete a questionnaire giving their opinion regarding the usefulness of the course in general and, more specifically, the importance of the various elements of the course.

Great Britain reported that 96 per cent of the in-service teachers who completed Minicourse One claimed to have been interested in the materials; 82 per cent would recommend the course to other teachers in their schools; and 57 per cent claimed to be more confident in their ability as a teacher as a result of the course. At the end of the course, the teachers considered most of the skills to be useful. No more than 22 per cent questioned the usefulness of any given skill. For the skills that were to be decreased in use, a somewhat larger proportion remained unconvinced; some 37 per cent thought it was often necessary to repeat questions and a third

Table II

MINICOURSE ONE

Pre-service Teacher Performance

Country	USA					Sweden					The Netherlands				
	Experimental		Control		% Change Pre-Post (Experimental)	Experimental		Control		% Change Pre-Post (Experimental)	Experimental		Control		% Change Pre-Post (Experimental)
	Pre-Course	Post-Course	Pre-Course	Post-Course		Pre-Course	Post-Course	Pre-Course	Post-Course		Pre-Course	Post-Course	Pre-Course	Post-Course	
Sample Size	32		14			32		10			36		36		
Teaching Skills															
Redirection	21.78	28.86	20.78	20.71	32.5	23.11	31.75*	14.15	13.83+	37.4	21.17	38.53	23.47	19.44+	82.0
Prompting	2.01	2.10	1.28	1.64	4.5	.92	3.50*	.72	.28	280.4	2.17	5.28	1.56	1.61+	143.3
Clarification	2.93	6.02*	2.78	2.57	105.5	3.73	4.77	1.95	2.79	27.8	2.53	5.58	3.14	3.19+	120.5
Refocusing	-	-	-	-	-	0.00	0.04	0.00	0.00	-	.22	.44	.31	.17+	100.0
Repeating own question	3.26	2.73	5.07	3.14	-16.3	3.72	2.92	4.24	3.49	-21.5	8.42	6.81	9.11	7.53	-19.1
Answering own question	1.18	.92	3.01	3.00	-22.0	.52	.22	.46	1.28+	-57.7	4.22	1.22	3.56	4.00+	-71.1
Repeating pupil's answer	18.01	8.63*	23.35	23.28	-52.1	9.47	2.59*	10.01	8.34+	-72.7	44.22	12.64	37.19	33.61+	-71.4
Length of pause after question	1.43[a]	2.35*[a]	1.69[a]	1.78[a]	64.3	1.88	3.72*	2.03	1.86+	97.9	1.64[a]	3.40[a]	1.65[a]	1.60*[a]	107.3
Per cent higher cognitive questions	52.94[a]	44.35[a]	27.08[a]	23.36[a]	-16.2	38.00	49.00*	63.00	55.00	28.9	2.22[b]	3.25[b]	3.15	2.78	46.4
Per cent teacher talk	45.85	33.36*	50.41	44.24	-27.2	37.27	27.48	44.24	38.31+	-26.3	54.45[c]	35.12[c]	52.99[c]	46.28*[c]	-35.5
Pupil Skills															
Length of response	6.76[a]	10.28*[a]	6.55[a]	7.45[a]	52.1	10.93	9.19	11.02	13.48+	-15.9	6.27[a]	9.93[a]	7.15[a]	6.90[a]	58.4
Number of one-word responses	4.72	3.02	5.53	3.64	-36.0	-	-	9.37	7.25	-	7.22[a]	5.22*[a]	7.19[a]	8.36	-27.7

*) Significant at $p \leq .05$. Represents significant change pre-course to post-course.

+) Significant at $p \leq .05$. Represents significant difference between experimental and control group performance.

a) Based on 5-minute sample.

b) Represents total number of higher cognitive questions rather than per cent.

c) Based on 8-10 minute sample.

thought it sometimes was useful to repeat pupils' answers. When teachers were asked to evaluate the extent to which the course had improved their teaching, they indicated equal benefit to their teaching in the small group situation in which they practised and the whole class situation in which they generally would apply the skills.

In Sweden, teacher response to a post-course questionnaire demonstrated that the minicourse met with extraordinarily positive acceptance. A large number of the responses implied that the course should be made obligatory in teacher education. Some exemplary comments from the trainees:

- The course gave me more than I had hoped. It took up things which were useful and worth thinking about for the future teacher.
- A very good and important course which can give more than hundreds of lectures in the same subject.
- The course is a very welcome contribution to the otherwise so theoretically ponderous teacher education.
- It is much needed even if it was bothersome to have it during the practice term.
- Everyone should have a chance to take the course.

The Netherlands teachers reported that, in general, the course was a very positive and useful experience.

Specifically, the Netherlands teachers found the video-recording and viewing of one's own behaviour to be the most important part of the training model. The videotapes demonstrating the use of the course skills were second in importance. Sweden also reported that the microteaching part of the course was most worthwhile. Getting concrete, detailed descriptive teaching skills to learn was another positive feature. Lack of time to complete the training activities was a negative feature reported by the Swedish pre-service teachers. They also reported some difficulty adapting the course to young pupils, although their use of the teaching skills did not differ from that of teachers in older classes.

Teachers in Great Britain also favoured the microteaching experience as the most important feature of the course. The forms for self-evaluation of the micro-lessons and the general background material in the teacher handbook were among the components receiving the lowest ratings.

d) Summary. Main field test data indicate that both the in-service and pre-service adaptations of Minicourse One were successful. Teachers made significant changes in their use of a majority of the teaching skills included in the course and they considered the training to be a positive experience. Based on this information,

each site determined that they should proceed with a final revision of the materials and with plans for dissemination of the redeveloped product. Decisions and actions taken in this regard are described in the following section.

Operational Product Revision

After the main field test, the transfer sites spent considerable time reviewing the data regarding teacher performance and teacher opinions and attitudes to determine what, if any, changes should be made in the redeveloped products. Staff observations made *in situ* during the field test were also used as a guide to needed revisions.

In Great Britain the changes were primarily related to clarifying the structural organisation and instructional content of the materials. Reorganising the teacher handbook was the major change. Chapter numeration was changed to correspond with the lesson being taught. New lesson planning sheets and more examples of the teaching skills were added. Self-evaluation forms and follow-up questionnaires were redesigned. Research data from the United Kingdom main field test were inserted. Changes in the instructional videotapes focused on demonstrating certain of the teaching skills with more clarity and replacing United States research data referred to in the narration with United Kingdom main field study data. The co-ordinator's handbook to assist other teacher-training institutions with setting up and conducting a minicourse was also completed at this time. Suggestions in this handbook drew heavily upon the experience of the United Kingdom team during the main field test.

The research team at the University of Nijmegen made changes in three sections of the teacher handbook. These were those in which higher cognitive questioning, redirection, and refocusing were presented. The main field test teachers had found these sections to be unclear. This revised version is currently being tested in a small-scale operational field test.

Information on final product revision is not, as yet, available from the other transfer sites. It appears that no major changes have been required and the earlier decision to eliminate an operational field test and move directly to dissemination of the materials can be pursued.

Dissemination and Distribution

Given an educational product that is as successful as the microteaching-based teacher training system appears to have been, three critical questions must be considered by the institutions that sponsored the development, or as in this transfer study, the

redevelopment of the product. The first is how to inform other potential users of the availability of the product. Once the users have been informed, the second question is how to encourage them to change their existing educational programmes so that the new system can be installed. Whenever the diffusion of information and the installation processes are successful, the third question then is whether additional products of this type should be developed, tested, and disseminated.

All these questions were confronted during the original development of the minicourses. Information was disseminated through a national demonstration project sponsored by the institutions which funded the minicourse research and development effort - the United States Office of Education and the National Institute of Education. Presentation of papers at professional conferences and articles in professional journals also served as an information diffusion source. The National Teacher Corps sponsored a pilot study of ways the materials could be inserted into pre-service teacher training. A marketing study(1) of Minicourse One, Effective Questioning, also was completed. Additional minicourses, some 14-16 in all, were developed and tested; at present some 12 have been released for general use. Yet, even with all this effort, the materials are not in general use throughout the United States. Over 1,000 copies of Minicourse One and several hundred copies of the other courses have been sold but this represents only a small proportion of all the potential users in the country. Inserting such an innovative and complex system into ongoing in-service and pre-service teacher-training programmes appears to be an arduous task. The original developer has much to learn from the redevelopment teams.

In anticipation of the need to disseminate the redeveloped training materials, several of the transfer sites included in the main field test design the acquisition of information which would facilitate the later distribution and use of the minicourses. For example, the United Kingdom tested Minicourse One in a teacher-centre setting since this way to organise for training is being installed throughout the nation. This required some modification in the original training procedures, i.e. pupils and teachers had to be transported to the centres. The testing was conducted in two types of centre; one based in a large university, another in a small, local college. Having confronted and resolved the problems that occurred during this test, the United Kingdom redevelopment team is now prepared to advise other sites regarding procedures which best support installation of minicourses into a centre-based in-service teacher-training programme.

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1) Hutchins, C.L., & Dunning, B. Monitoring Study: Minicourse 1. San Francisco: Far West Laboratory for Educational Research and Development, 1971.

Sweden used the main field test to obtain information which would aid in resolving four critical dissemination questions:

1. At what time during the /pre-service trainee's/ education should the minicourse be offered?
2. How can the minicourse be integrated with other parts of the teacher education programme?
3. Which student teachers should be given the opportunity of taking the minicourse?
4. With the present resources, how many student teachers can take the course?

To conduct a minicourse, a small room for microteaching, videotape equipment, pupils with whom the teacher is familiar, and substitute teachers (or some other means for releasing the teacher-in-training for his/her microteaching lessons) must be available. For these reasons, Sweden has recommended that minicourse training be offered during one of the longer practice periods in pre-service education. Since the pre-service trainees preferred a period that would fall in the middle of their education, the research team suggested that, under the new pre-service training guidelines which became effective in Sweden in the autumn of 1974, minicourse training should be combined with both the practice part of education and the study of pedagogics and methods.

Although the trainees felt the minicourse should be available to everyone, during main field testing the Swedish research team found that (given five sets of video equipment) only 32 teachers could complete the course at any one time. The more participants at each site, the more efficiently the equipment could be used, but based on present patterns of student teacher assignment, 32 was a maximum number for each cycle of the course. Even more important, it was essential that a co-ordinator be assigned to design and manage the training schedule, assist the student teachers with microteach lesson planning and evaluation, etc. This individual is not, at present, an "existent resource" in Swedish pre-service education. Providing such a person therefore, is a major problem to be resolved as dissemination of minicourse training becomes more widespread.

Another factor that is relevant to the diffusion of the minicourse is the range of pupils with whom the teaching skills can be used effectively and, therefore, the size of the potential group of teachers to be trained.

All the Minicourse One transfer sites inquired into some aspect of this question. Sweden and the Netherlands tested the course with teachers who were working with pupils of a wider age range than were included in the original study (grades 1-6 or 7 rather than 4-6). Generally, they found the teaching skills were useful across

the entire range of pupils. Teachers working at all levels made similar improvement in their use of the course skills. Thus, the potential market for use of the materials in these countries may be larger than the one originally identified in the United States.

Great Britain and the Netherlands also investigated school setting as a factor which might influence the successful application of the training system. While the Netherlands found certain teaching skills more effective in one setting than another (urban working class vs. suburban middle class), the course could be used productively in both school types. Great Britain, likewise, found the course useful in urban, rural, and suburban schools.

Findings related to the Minicourse One transfer, as discussed above, suggest that the new teacher-training system has a wide range of potential users. The redevelopment teams are prepared to offer recommendations and guidance regarding installation of the materials. Next steps are the responsibility of the national educational agency in each country. The Centre(s) for Innovation in the Netherlands have responsibility for organising meetings for potential users in that country. Other sites have yet to formulate specific diffusion plans. However, both Great Britain and the Netherlands have elected to proceed with the transfer of additional minicourses currently with planning dissemination of the already-adapted products.

Critical Factors in the Research and Development Process

The research and development process used in this pilot study in transfer was continuous in nature. Each change in the redeveloped product was dependent upon the results of the adaptation and testing which preceded it. The entire redevelopment effort, then, was a sophisticated and complex undertaking from which the following points emerged:

i) Continuity of the research and development staff was important to the progress of the adaptation, as changes in staff assignments midway through the process would be difficult and time-consuming. Future projects would do well to consider the entire period for completion of transfer and assign staff who can remain throughout. These staff require both high level research skills and experience and expertise in the areas of pedagogics and methodology.

ii) In transferring the minicourses, and as might be anticipated in the future transfer of complex educational systems, adaptation of the materials to the culture of the transfer country was a large task. Generally, this took much more time than had been anticipated.

iii) Using outside agencies to produce the videotaped models of teaching was expensive and less than effective. If possible, future projects should plan to build their own in-house production capability.

iv) Planning for and conducting the main field test was particularly arduous. This was due to the need to provide facilities and pupils for microteaching. Having a full-time individual available to plan and co-ordinate schedules and supervise the general operation of the training programme was essential. In fact, such an individual probably should be included whenever minicourse training is planned and carried out.

v) As evidenced by the Swedish study, some "short cuts" may be taken in the original research and development process when the adapting country already has had considerable experience in some aspect of the new system. Sweden shortened the preliminary field test to a considerable extent because of their previous work with microteaching. Main field test data for this site indicated that the version of the training package developed after the abbreviated preliminary test was as effective in producing changes in teacher performance as the materials in other countries which underwent a complete preliminary test prior to revision.

It must be emphasized, however, that elimination of some part of the research and development process should be done only when the original development indicates a step is no longer necessary, i.e. the operational field test in the minicourse cycle, or the transfer team already has sufficient experience and expertise in an area to feel confident about eliminating the test of some component of a product. Nevertheless, a redeveloped product should always undergo a main field test.

vi) An important outcome of transfer for the original developer is the new information that can be obtained regarding: (1) extensions of the range of use of the product; (2) revisions in the product which make it more effective and which, therefore, should be incorporated into the original version; and (3) new approaches to dissemination and utilisation of the product. In order to obtain this information the original developer should maintain continuous contact with the transfer sites so that "on-the-spot" information is communicated as well as the summary statements which appear in the various research and development reports.

vii) The participants in this pilot study requested that more interaction with other transfer sites be included in future projects. Representatives of the five sites which completed the entire transfer process met together only twice: at the beginning (in Stirling) when plans were developed, and at the end when all testing was completed. Although the research conducted by the various sites has, in many respects, been complementary rather than repetitive, additional meetings to share main field test research designs, discuss implementation problems, etc. would have been helpful to the transfer teams and may have made the total effort even more productive. This is not to say that this pilot study has not been an outstanding example of transfer - for indeed it has; but more extensive inter-site interaction and co-operation may be essential to the success of future projects.

viii) Similarly, in this transfer study, contacts with the original developer were carried out primarily on a site-by-site basis. This had advantages because it allowed for thoughtful consideration of each country's individual questions and problems. Such interaction is essential to successful transfer. At the same time, more total group interaction with the original developer may have fostered even greater creativity in the adaptation effort in that the ideas from one site may have suggested new approaches to another. When the original developer participates in the brainstorming of such additions to, or modifications of, the product, the teams can proceed with greater confidence that the change will be effective.

V. SUMMARY AND CONCLUSIONS OF THE MICROTEACHING TRANSFER STUDY

The major conclusion that may be drawn from this pilot study of the transfer of microteaching-based teacher-training materials is that in six of the seven countries which initially elected to participate, the transfer effort appears to have been successful. These projects followed the original research and development process with considerable insight and expertise. The adapted materials were as effective as the original product in bringing about desired changes in teacher performance. The research that was conducted as part of the research and development process provided new information which extended the range of usefulness of the product beyond that established by the original developer.

In the case where the adaptation of the materials was not completed, important information was obtained regarding the support structures which must be available for a transfer effort of this scope and size to be successful. This knowledge, added to that gained in the projects which were carried to conclusion, makes it possible to suggest some guidelines for future transfer efforts and to propose some additional research questions that may merit investigation in future studies in transfer and/or in future efforts to undertake original development involving international co-operation.

Perceived Benefits from the Study

The following statements of benefits and gains to the institutions involved in the study are taken from responses to a questionnaire focused on this aspect of transfer which was prepared by directors of the adaptation projects in the various participating countries.

Direct benefits

- The adaptation and introduction of the microteaching-based materials into the teacher education programme provided the opportunity to make a critical analysis of an educational practice (microteaching) which was gaining attention among European universities and, where necessary, to adapt the original model to the unique and particular needs of the implementing institutions.

- The experience of adapting a foreign learning system required adapters to take a more careful and critical look at the aims and practices of their own systems. Innovation in the ongoing teacher training programmes of the participating countries, therefore, may have moved more rapidly than otherwise might have been expected.

- The examination of the processes involved in the development of the original materials and in the organisation of the teaching training system stimulated interest in carrying out original development work in similar methods and systems. This interest, combined with the research and development expertise generated by the transfer effort, should advance the potential for a co-operative international effort in original research and development in teaching. Given the similarities in teaching evidenced by the main field test findings, such an effort should be profitable for all concerned.

- The introduction of an innovation at lower cost and with more rational use of manpower and materials through co-operation in development and planning than would have been possible had the participating countries started from scratch.

- The development of a new set of skills (transfer/adaptation) and the enhancement of skills in the design and execution of research and development programmes in teacher education. Each of the five countries which completed the transfer study now has a cadre of people who can serve as directors of future research and development projects, trainers, and liaison personnel with colleagues abroad.

Perceived long-term benefits

- The pilot transfer has resulted in both the development of a particular set of skills and a network of experienced researchers which can serve as the base for future and wider-scale international co-operation in exchange of innovation.

- This network can also provide the core for international research and development work in the production of new methods and systems.

- The findings of the pilot study in transfer provide a data base from which to build toward co-operative original research and development, particularly in the area of teaching and teacher education. The similarities among teachers across the countries in Western Europe appear to be greater than the differences inherent in individual cultures. Co-operative efforts to produce new knowledge about teaching and new approaches to teaching and teacher training, therefore, provide both a viable and a rewarding alternative to individual, isolated original research and development.

Disadvantages

- The transferred system may be based on philosophies and practices that are contrary to those in the adapting country. The microteaching materials were sometimes criticised as being too "behaviouristic". Adaptation, therefore, had to deal with this factor as well as the redevelopment of the materials per se.

- Transfer may be seen as a "too easy" solution to certain problems and adaptation could be carried out without enough concern for social/cultural factors or the steps and procedures necessary to effect a suitable adaptation. "Short cuts" in the research and development process were discussed earlier in this report. Should the process be modified unwisely, or an inappropriate system be transferred, the process of transfer and adaptation could be more, rather than less, expensive than original development in that an ineffective, unusable product would result. Further, this pilot experience suggests that direct translation/adaptation will seldom be possible. Appropriate adaptation, therefore, is critical and requires research and development skills that some countries may not, as yet, have available.

Factors that Influence Successful Transfer

Since not all the sites in this pilot study completed the transfer of the minicourse system, it is possible to suggest factors that supported effective transfer and those which inhibited the completion of the redevelopment process.

Facilitating factors

- Some past experience with the processes implicit in the system to be transferred (in this case, analysis of teaching and microteaching) and, in some cases, familiarity with the materials themselves.

- Availability of a team of individuals with the necessary knowledge and experience who can be assigned to carry out the transfer and who will be able to stay with the project until it is completed. With a system (such as the one involved in this study) which necessitates intervention in ongoing programmes of education, this team of individuals should be knowledgeable about the operation of the ongoing programmes as well as possessing research and development skills and having experience with the processes underlying the product which is being redeveloped.

- Access to support from national governments in terms of both funding and leadership in launching the study. In this study, absence of these support bases was a major reason for the failure to begin the transfer effort in one site and to complete it in another.

- A generally favourable attitude toward the product and the practices on which it is based. Even though transfer means re-development, a considerable amount of effort must go into the adaptation and testing of the materials. A commitment to the value of the system is needed to maintain enthusiasm for the tasks at hand.

- Enthusiasm among the adaptation units in different countries as well as in the individual development teams. Such enthusiasm provides much-needed motivation. Had there been more interaction among the transfer sites, in the microteaching study, it could be anticipated that this would have been a very strong factor underlying the generally positive attitudes toward the entire transfer experience.

- In the case of the United Kingdom and Sweden, previous experience with the transfer of other learning systems. This provided an experience base from which to build a plan for the present pilot study.

- The co-operation of the original developer and the owners of the copyrights to the product. An important question related to transfer is whether the adapted product maintains, or improves upon, the effectiveness of the original version. Only through co-operative sharing of research designs and information and provision of original materials (handbooks, videotapes and scripts for model lessons, etc.) can the transfer site obtain the information needed to maintain comparability between the products and the research and development processes they move through. This comparability also necessitates copyright release in that the adapted product, depending upon the amount of cultural adaptation required, resembles to some greater or lesser extent, the original product.

- The opportunity to view the materials and discuss their merits with educators from other countries during the international meetings and conferences held. Without such opportunities, most of the sites would probably never have become interested in the materials and/or the decision to adapt them would have taken much longer.

- The interest and active participation of national and international level educators and agencies. The value of this interest in terms of monetary support and motivation to complete the transfer has already been discussed. Without this assistance, the pilot study probably would not have achieved such a high level of success.

- The type and amount of "cultural content" that had to be adapted. None of the essential features of the minicourse training system had to be revised in order to instal and test the redeveloped product in the ongoing educational programmes of each country. The changes that were made were largely in the areas of examples of the

teaching skills (rather than in the skills themselves) and in the discussion of the skills in the teacher handbook. It was, therefore, somewhat easier to effect the transfer than would have been possible had a major feature of the system needed to be modified.

Inhibiting factors

- In terms of this pilot study, difficulty in keeping to the agreed time schedule. Although the five sites completed the transfer by June 1974 as planned, redevelopment of the prototype version of the materials, in all instances, took considerably longer than was anticipated and finding a time during the school year when the main field test could be conducted also provided some scheduling problems. The transfer teams, at times, felt that the schedule failed to provide the time needed to complete all the desired revisions of the materials or to try out in the main field test all the approaches to using the materials that had been proposed. A longer schedule may be desirable. However, such a decision should be weighed against concern for the delay between initiation of the transfer and availability of the redeveloped product for general use in the adapting country.

- Opposition to the nature of the materials on the part of some authorities. As was noted earlier, the behaviouristic view of teaching which underlies the minicourses caused some concern in several countries. Working through this issue resulted in some brief delays in the transfer effort.

- In some cases, technical problems relative to the remaking of videotapes and other such aids. This was a particularly difficult factor when the research team had to go outside their home institution to obtain technical expertise for videotape production.

Conclusions Regarding Transfer by the Pilot Study Participants

Following completion of the majority of the research and development activities, a final meeting was held in June 1974 to review the various pilot studies and to make recommendations for future transfer projects. The recommendations(1) were these:

- There is high value in "transfer" as long as certain conditions are mutually understood and agreed upon by the countries involved. Basically, transfer at the level we have conceived is not just transplanting.

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1) A complete report of the meeting is contained in The International Transfer of Learning Systems, Programme Area II - Project 3: Summary Report of Participants in the Meeting to Evaluate the Transfer Adaptation of Learning Systems. OECD, Paris, 17, 18 and 19 June, 1974.

- Transfer activity has led to co-operation across national boundaries among political and educational groups. Rather than just talking about international co-operation, those involved have developed mutual respect by learning from each other. The focus on specific issues or problems to be solved has enabled educators across boundaries to grapple with and to learn to cope with the micro and macro dimensions involved in bringing about other changes.

- Transfer may be interpreted as an easy solution to similar educational problems in nations. Our experience views the process as fostering creative activity, problem solving and the development of higher level skills by recognising and valuing cultural pluralism.

- Transfer projects have produced not only a network of activities around a specific issue, but have resulted in the creation of a network of people with new resources, new skills, new talents who can now be called upon as consultants by other nations interested in adaptation, redevelopment and co-development activities.

- CERI, as a unique international agency, has created an effective framework for international co-operation through its experimental work. This has been accomplished by establishing a climate which values responsible educational change and innovation, and by making available the special services requested by countries.

- The international transfer of learning systems experiment has reinforced the need for an international agency such as CERI to function beyond the catalytic stage.

Role of Linking Agencies

Both CERI and the Far West Laboratory for Educational Research and Development have served as linking agencies for this transfer study. The importance of their support was discussed earlier in the portion of this report detailing the factors that facilitate transfer. The purpose of this discussion is to describe exactly what roles these agencies performed so that future transfer efforts can determine what type of service and assistance should be provided by the international agency and the original developer.

The Role of CERI. CERI has served primarily as a linkage and information-dissemination unit. Originally, the meetings sponsored by the Centre brought together the producers, developers, and government representatives. These same meetings served as a means for disseminating information regarding products potentially available for transfer and provided opportunity to examine the materials.

As interest in transfer was generated, CERI facilitated access to various levels of education within the several countries.

Bringing together people responsible for education at the national level and those who were interested in and ultimately would conduct the redevelopment of the materials led to the creation of the support base which now has been identified as a major requirement for successful transfer.

Throughout the transfer process, CERI also performed a certain managerial role in maintaining the international network and facilitating exchange of materials between the sites and the original developer.

With the completion of the pilot study, the Centre now has three important roles to pursue. One is to disseminate the results internationally. A second is to encourage and facilitate (as requested) continued contact among the transfer sites. This may include suggesting possible areas for co-operative original development among the research teams, and/or recommending additional research and development activities related to transfer. The third is to serve as an international consultant (so to speak) by advising and assisting other agencies (at the international or individual country level) which are interested in transferring one or more educational systems. The experience and expertise in transfer acquired by the CERI staff who guided and assisted this project should be used to further educational innovation just as the network of skilled research and development people from the participating countries will be employed.

The Role of the Far West Laboratory. As the original developers, certain members of the staff of the Far West Laboratory have provided considerable guidance to the transfer sites. This has included assistance in planning for redevelopment of the prototype version of the adapted materials, designing the comparative main field test studies, and assessing main field test results to determine necessary final product revisions. Much of this assistance has been provided through correspondence. Most sites also had the benefit of one or two on-site visits by a Laboratory representative. In addition, Great Britain, the Netherlands and West Germany sent members of their respective research teams to the Laboratory.

A small role for the Laboratory in terms of time required, but a major role in terms of importance to the study, has been provision of copies of all the original materials. The Laboratory staff also arranged for relaxation of the copyright restrictions on the Minicourses so that transfer could occur.

Perhaps most important, the Laboratory personnel have become accepted members of the research and development network that has resulted from the transfer study. Initially, the three or four individuals involved had a higher level of expertise and experience

in research and development activities than most of the transfer teams (this is no longer the case, however, given the skill the transfer teams have developed). Their skill added much to the early planning for and start-up of transfer activities. Now because of their contacts and reputations nationally and internationally, these persons can serve as resources for information regarding other innovative teacher training materials being developed in the United States and can provide access to the most recent research on teaching. Their participation in the network, therefore, can keep the persons and agencies involved at the forefront of thinking and action in matters of teaching and teacher education.

Without the co-operation and participation of the original developer, this transfer effort would have been much more difficult, if not impossible, to carry out. Involvement of the original developer should be considered a necessity for any future operation of this kind.

Guidelines for Transfer

Throughout this report, certain conditions have been identified as critical to the success of a transfer effort. From these statements, several summary guidelines may be generalised to assist those individuals and agencies which wish to transfer other educational innovations:

The decision to transfer. Prior to electing to participate in a transfer effort, a potential transfer site should consider the following questions:

1. Is the educational system which is proposed for transfer compatible with the ongoing programme of education in the country (region)? Does it involve a quantum move ahead or a more moderate revamping of education? Can the innovation be managed in terms of the amount of change in philosophy and behaviour which will be required by those individuals who must adapt and instal the transferred product?

The answers to these questions are critical in that too radical and too rapid a change in education may be expected to make the transfer effort difficult, at best, and quite probably, impossible to carry out.

A "hands-on" perusal of the materials and an opportunity for an open dialogue with the original developer are essential steps toward answering these questions.

2. Does the potential transfer site have available personnel with the skills and knowledge necessary to design and manage the transfer effort?

Because a rather large amount of cultural adaptation appears to be required in transferring educational systems, the on-site

staff for a transfer effort must have research and development skills. The original developer can guide the adaptation process but should not actually perform the work inasmuch as these individuals are not aware of the differences in curriculum and philosophy of education that must be attended to in the adaptation. Research and development expertise, therefore, must exist at the level of the transfer team.

3. Within a potential transfer country are there individuals who have experience and expertise in the theories and procedures which underlie the educational product (system) to be transferred?

As already mentioned, the successful transfer sites had experience with analysis of teaching and microteaching - the two major elements around which minicourses were built - prior to carrying out the adaptations. It may be expected that other innovative educational systems also will have sophisticated theoretical and operational bases. Careful analysis of these elements should be completed by a potential transfer site, independently or in conjunction with the original developer and/or an international unit with expertise in educational innovation and transfer, to determine what experience and expertise are needed. If the prerequisite knowledge and experience are not currently existent, product redevelopment should be delayed and acquisition of these basic skills should be the first step in the transfer process.

4. Have all the necessary institutions been represented in the decision-making process?

In the successful pilot studies reported here, all decisions relative to transfer involved individuals representing both the national educational agency and the local site where the transfer process was completed. Any inquiry regarding transfer which involves one, but not the other, of these parties should be questioned. All possible attempts should be made to generate interest in and a commitment to transfer at both levels.

5. Did the original product achieve the specified objectives? What data are provided as evidence?

Obviously, transfer of an ineffective product would be of questionable value. If it were considered, the need for extensive redevelopment, and possibly some original development, must be anticipated.

Developing the prototype of the adapted product. A potential transfer site may assume that the adaptation of any educational system to a new culture will require considerable redevelopment.

Questions to consider before undertaking this task include:

1. Does cultural adaptation require that a major component of the original system be modified?

In transferring the microteaching-based training materials, the cultural adaptations involved primarily the examples of the teaching skills. No major component of the training cycle and no teaching skill area contained in the original materials was changed. This undoubtedly is an important reason for the similarity in effectiveness of the adapted and original products.

Whenever future transfer involves changes in a major part of the original product, it is important to question if, in fact the transfer should occur. If it does, extensive field testing must be planned to determine whether such changes affect the outcomes originally achieved by the product.

2. Are the individuals and facilities required for developing the prototype available?

Redevelopment of many of the current innovations in education may be expected to involve extensive use of technology (i.e., videotape equipment, computer programmes) as well as textual (printed) materials. Access to the required technological facilities, both equipment and trained staff, therefore, may be critical to successful transfer.

3. Can the monetary support necessary to complete the redevelopment of the product be obtained?

Generally, redeployment of the minicourses involved more time and effort than was anticipated even though no major component of the original product was modified. It appears, therefore, that it is easy to understand the cost of transfer. Careful attention should be given to the scope of the redevelopment effort and the associated costs.

Testing the redeveloped product. Field testing to determine the effectiveness of the redeveloped product is an essential part of transfer. It should be required in all projects. This being the case, the following questions should be considered:

1. Are there available to the transfer team operating educational institutions (i.e., elementary schools, teacher training programmes, etc.) willing to participate in the testing of the redeveloped product?

Often, a potential transfer site may have had little, if any, previous contact with educational institutions at the level in which the adapted product will be used. For example, a university-based research team may not have previously established a direct working relationship with a local educational authority. Yet, co-operation of this agency is essential if field testing is to occur. Prior to initiating the transfer effort, the interested parties, therefore, should determine whether the necessary liaison between various individuals and institutions exists or can be established.

2. Has the transfer team had previous experience with the type of research to be included in the field test?

The main field tests of Minicourses One and Nine involved a high level of empirical research. Other field tests also may be expected to include such forms of enquiry. At least one member of the transfer team, therefore, should possess skill in empirical research design and data analysis.

Additional Research Questions

This pilot study in transfer of microteaching-based teacher training materials has provided answers to several questions regarding transfer. Namely, it has demonstrated that transfer of a complex educational system can be effected successfully. It also has pointed out additional areas for inquiry. Some of these are listed below. Many others could be added by the pilot study participants.

- The minicourse materials focused primarily upon changing one dimension of the teaching/learning process - the behaviour of the teacher. Future research on transfer needs to explore what occurs when the adapted product requires change in multiple dimensions; i.e., both the performance of the teacher and the use of new approaches to learning by the pupils; and/or the organisation of the learning environment, the interaction of pupils with pupils, the interaction of pupils with teacher(s). When transfer assumes these dimensions, what, if any, new problems are faced? Is it as successful as transfer focusing upon changing one dimension at a time?

- The minicourse applies technology (videorecording) to the training of teachers in a self-instructional format. There are other approaches to self-instructional teacher training which could be studies to determine comparative case of adaptation, perceived benefits, etc.

- The present study suggests that teachers in the United States and Western European countries are similar in their teaching performance and their attitudes toward teaching and teacher training. Building upon this information and the research and development network that has been established, co-operative original R & D efforts should be pursued. Questions to be investigated jointly might include:

- What characteristics and skills are most apt to be exhibited by teachers who are judged to be highly effective in their work with pupils?

Do teachers who are judged to be less effective possess the same, or different, characteristics and skills?

Can teachers who do not have the specified skills acquire them through training? What form of training?

- What range of skills and strategies (repertoire) do teachers apply in their classrooms? Are skills used differentially with pupils of various types? Which skills are most effective with which pupils and in which content areas?

- What types of teacher training programmes can be developed that use among other things, original and/or adapted training materials, self-directed and self-selected training experiences, and application of research findings to teaching? What problems must be resolved to make such a training programme functional? Is one type of programme more effective than another in changing teachers? Changing pupils? Changing the organisational structure of the classroom?

- Once teachers acquire a wide range of teaching skills, they must elect to use or not use them based upon each unique teaching/learning situation. What types of decisions do teachers make? Are the decisions similar across cultures? How do teachers vary their teaching? According to what criteria or on the basis of what types of information does variation occur? Is the teacher the primary source of differential approaches to instruction?

- The cultures of Western Europe and the United States are similar in many respects. Future research should consider whether transfer is as successful as it was in this pilot effort when greater differences exist between the country that effected the original development and the one that adapts it (e.g., a Western European country and one in the Third World). What additional problems, if any, are faced in such transfer? Can the procedures and processes used in the microteaching pilot study be applied in such a situation? Are they effective?

SUMMARY

The pilot study here reported shows that transfer of educational systems is a viable approach to educational innovation. However, all products may not be suitable for transfer and all countries, or sites within countries, may not be ready to consider the transfer of a complex educational product. The readiness of the potential transfer site must be given careful attention at the time the decision to transfer is made. This decision must also attend to the effectiveness, complexity, and cultural differences of the original product. The co-operation and encouragement of the original developer and some type of linking agency (such as an international agency) are essential to successful transfer. Once a transfer network has been established, using the linking agency as a catalyst, co-operative original research and development is a natural next step in the process of improving education in the countries that participate.

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